

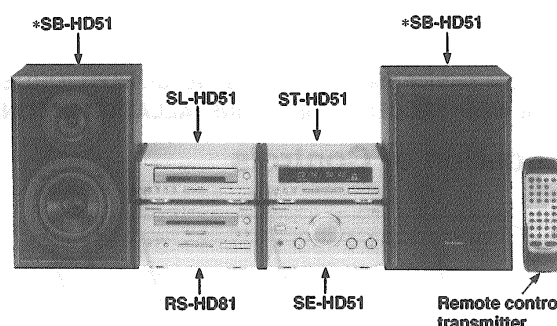
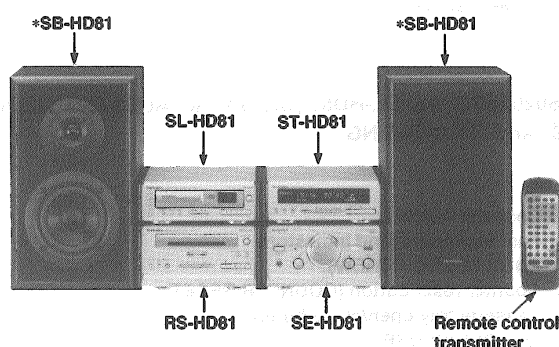
# Service Manual

Cassette deck



Cassette Deck

## RS-HD81



Because of unique interconnecting cables, when a component requires service, send or bring in the entire system.

Colour

(N) ..... Gold Type

Area

E ..... Europe.

System : SC-HD51

SC-HD81

### AR-1 MECHANISM SERIES

### Specifications

Deck system	Stereo cassette deck	S/N (Signal level=max recording level, TYPE II type tape)	
Track system	4 track, 2 channel	NR off	56dB (A weighted)
Recording system	AC bias	Dolby B NR on	66dB (A weighted)
Bias frequency	100kHz	Input sensitivity and impedance	
Erasing system	AC erase	REC (IN)	280mV/23kΩ
Heads		Output voltage and impedance	
(Recording/Playback head)	Permalloy head	PLAY (OUT)	280mV/220Ω
(Erasing head)	Double gap ferrite head		
Motors		■ General	
Capstan drive	DC servo motor	Dimensions (W × H × D)	196 × 103 × 221mm
Reel table drive	DC motor	Weight	1.8kg
Tape speed	4.8 cm/s		
Wow and flutter	0.1% (WRMS)	Notes:	
Fast forward and rewind times	Approx. 52 seconds with C-60 cassette tape	1. Weight and dimensions shown are approximate.	
		2. Design and specifications are subject to change without notice.	
Frequency response		* Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation. "DOLBY", and the double-D symbol are trade marks of Dolby Laboratories Licensing Corporation.	
(Dolby NR off)			
TYPE I (Normal)	20Hz-17kHz (DIN)		
TYPE II (High)	20Hz-17kHz (DIN)		
TYPE IV (Metal)	20Hz-17kHz (DIN)		

#### System/SC-HD51:

Tuner: ST-HD51, Compact Disc Player: SL-HD51, Amplifier: SE-HD51, Cassette Deck: RS-HD81, Speaker: \*SB-HD51

#### System/SC-HD81:

Tuner: ST-HD81, Compact Disc Changer: SL-HD81, Amplifier: SE-HD81, Cassette Deck: RS-HD81, Speakers: \*SB-HD81

Notes:\*..... Made in PAES

### ⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

# Technics®

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## Contents

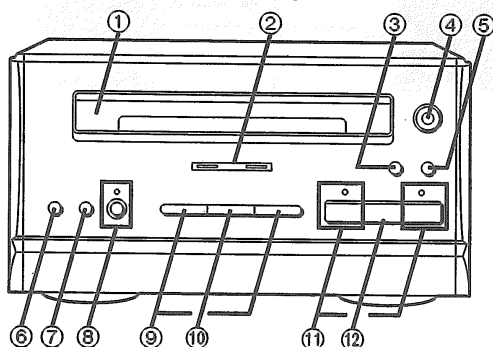
	Page
Location of Controls .....	2
Listening to Tapes .....	2, 3
Operation Checks and Main Component Replacement Procedures .....	4 ~ 10
Measurements and Adjustments .....	12 ~ 14
Service Mode Function of Cassette Mechanism .....	15, 16
Wiring Connection Diagram .....	16
Schematic Diagram .....	17 ~ 21

	Page
Printed Circuit Board Diagram .....	22, 23
Block Diagram .....	24, 25
Terminal Function of IC's .....	26, 27
Type Illustrations of IC's Transistors and Diodes .....	27
Replacement Parts List .....	28 ~ 30
Cabinet Parts Location .....	31
Loading Mechanism Parts Location .....	32, 33

### NOTE:

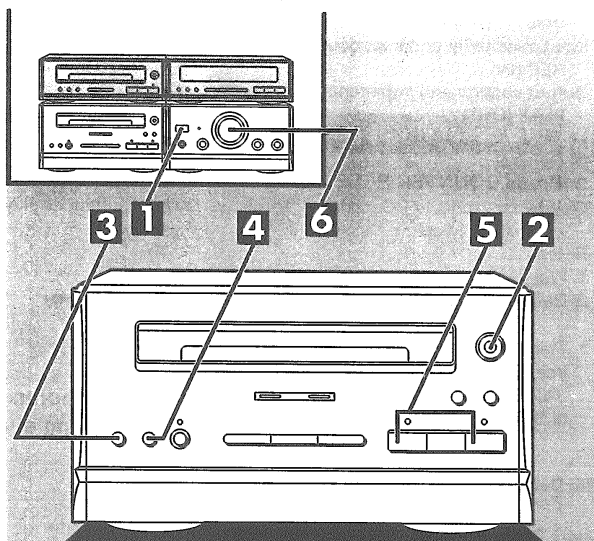
Refer to the service manual for Model No. SE-HD81 (ORDER No. AD9802028C2) and SE-HD51 (ORDER No. AD9802031C2) for information on "ACCESSORIES", "INSTALLATION", "CONNECTIONS" and "PACKAGING".

## Location of Controls



- ① Cassette holder
- ② Fast forward/rewind indicators (HIGH SPEED FF/REW)
- ③ Counter reset button (COUNTER RESET)
- ④ Cassette tray open/close button (▲ OPEN/CLOSE)
- ⑤ Display button (DISPLAY)
- ⑥ Dolby noise reduction button (DOLBY NR)
- ⑦ Reverse mode select button (REV MODE)
- ⑧ Record pause button and indicator (● REC PAUSE)
- ⑨ Fast forward/rewind/tape program sensor buttons ([TPS] ◀◀, ▶▶ [TPS])
- ⑩ TPS skip button (TPS SKIP)
- ⑪ Playback buttons and indicators (◀, ▶)
- ⑫ Stop button (■)

## Listening to Tapes



### Playback

#### Type of tape which can be played correctly:

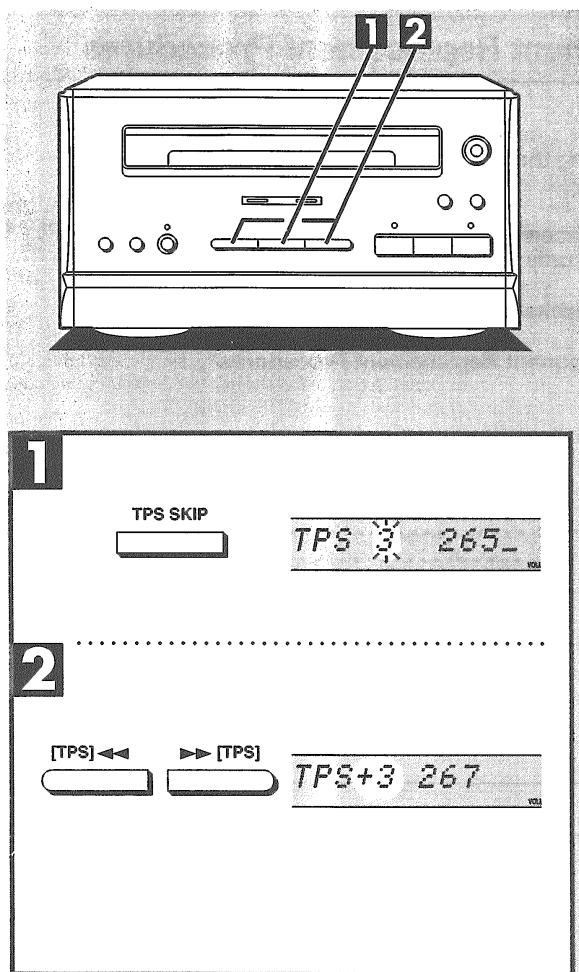
The unit automatically identifies the type of tape.

Normal position/TYPE I	○
High position/TYPE II	○
Metal position/TYPE IV	○

- 1 Switch on the power.**
- 2 Press ▲ OPEN/CLOSE on deck, and then insert the tape.**  
Load a tape with the exposed side facing the cassette holder's insertion part.  
Insert the cassette tape until it touches the back of the compartment.  
Press ▲ OPEN/CLOSE once again to close the cassette holder.  
**Note**  
Keep your fingers out of the cassette tray so that you do not get pinched when it closes.
- 3 To listen to a tape recorded in Dolby B NR**  
**Press DOLBY NR and check "□□" is displayed.**  
When playing back a tape which was not recorded on Dolby NR system, press DOLBY NR so that indications go off.
- 4 Press REV MODE to select the reverse mode.**  
Each time you press REV MODE, one of the indicators will appear.  
↔: The deck plays one side only, and then stops automatically.  
↔↔: The deck plays both sides, and then stops automatically.  
↔↔↔: The deck plays both sides 8 times, and then stops automatically.
- 5 Press ◀ or ▶.**  
▶: The forward side will play.  
◀: The reverse side will play.
- 6 Adjust the volume level as you like.**

#### To stop tape playback:

Press ■.



### To find the beginning of a program (TPS: tape program sensor)

The number of programs corresponding to the number of times TPS SKIP was pressed will be skipped, and the desired program is located (up to 9 programs before or after the program now heard).

#### 1 Press TPS SKIP until selecting the numbers of tracks you want to skip.

Each time you press this button, the display will change as follows:

TPS 1→2→3...8→9→TAPE  
↑

#### 2 Press [TPS] << or >> [TPS].

If the forward side (▶) is playing:

>> [TPS]: Skips forward by the number of tracks corresponding to the number you select in step 1. ("+" lights.)

[TPS] <<: Skip backward by the number of tracks corresponding to the number you select in step 1. ("-" lights.)

When you select "TPS 1", the deck will skip back to the beginning of the track you are currently listening to and will start playing it again.

The illustration shows an example when you select "TPS 3" while the forward side (▶) is playing.

If the reverse side (◀) of the tape is playing:

The reverse operation will take place.

#### Notes

- To change the setting (the number of the programs to be skipped, the tape travel direction, etc.) while TPS skip is activated, press ■ to stop the deck first.
- If the number of TPS skips specified is larger than the number of songs recorded on the tape, the unit may stop at the end of the tape or otherwise fail to operate correctly.

#### For your reference:

To skip to the next track or back to the beginning of the track you are currently listening to, perform only above step 2.

#### Notes

TPS is the function that searches for the silent passage in a tape program. So, it may sometimes fail to operate correctly in the following situations:

- When the interval between programs is less than 4 seconds
- When there is a particular low-level passage in a program (for example, classical music)
- When the program is less than 10 seconds, or when it is less than 10 seconds from the listening point to the beginning of the next tune
- When a tape recorded with fade-ins or fade-outs

## ■ Operation Checks and Main Component Replacement Procedures

### NOTE

1. This section describes procedures for checking the operation of the major printed circuit boards and replacing the main components.
2. For reassembly after operation checks or replacement, reverse the respective procedures. Special reassembly procedures are described only when required.
3. Select items from the following index when checks or replacement are required.
4. Refer the parts No. on the page of "Main Component Replacement Procedures", if necessary.

### ● Contents

#### • Checking Procedure for each P.C.B.

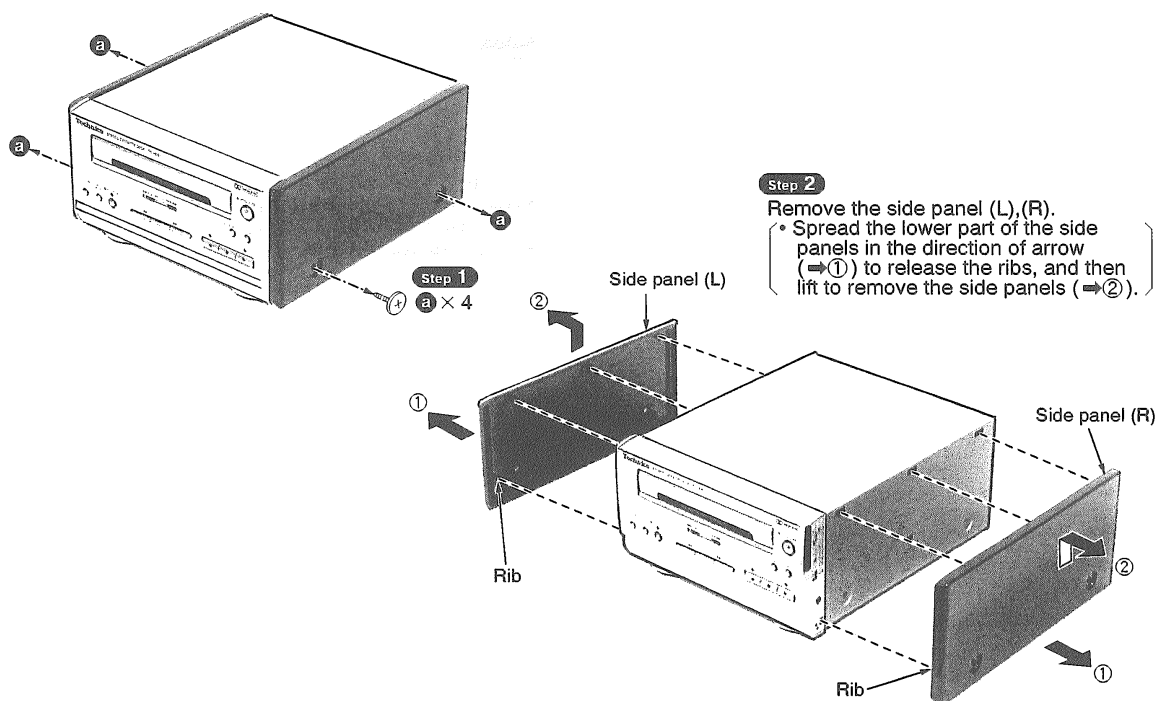
- |                                       | Page. |
|---------------------------------------|-------|
| 1. Checking for the operation P.C.B.. | 4,5.  |
| 2. Checking for the main P.C.B..      | 5.    |

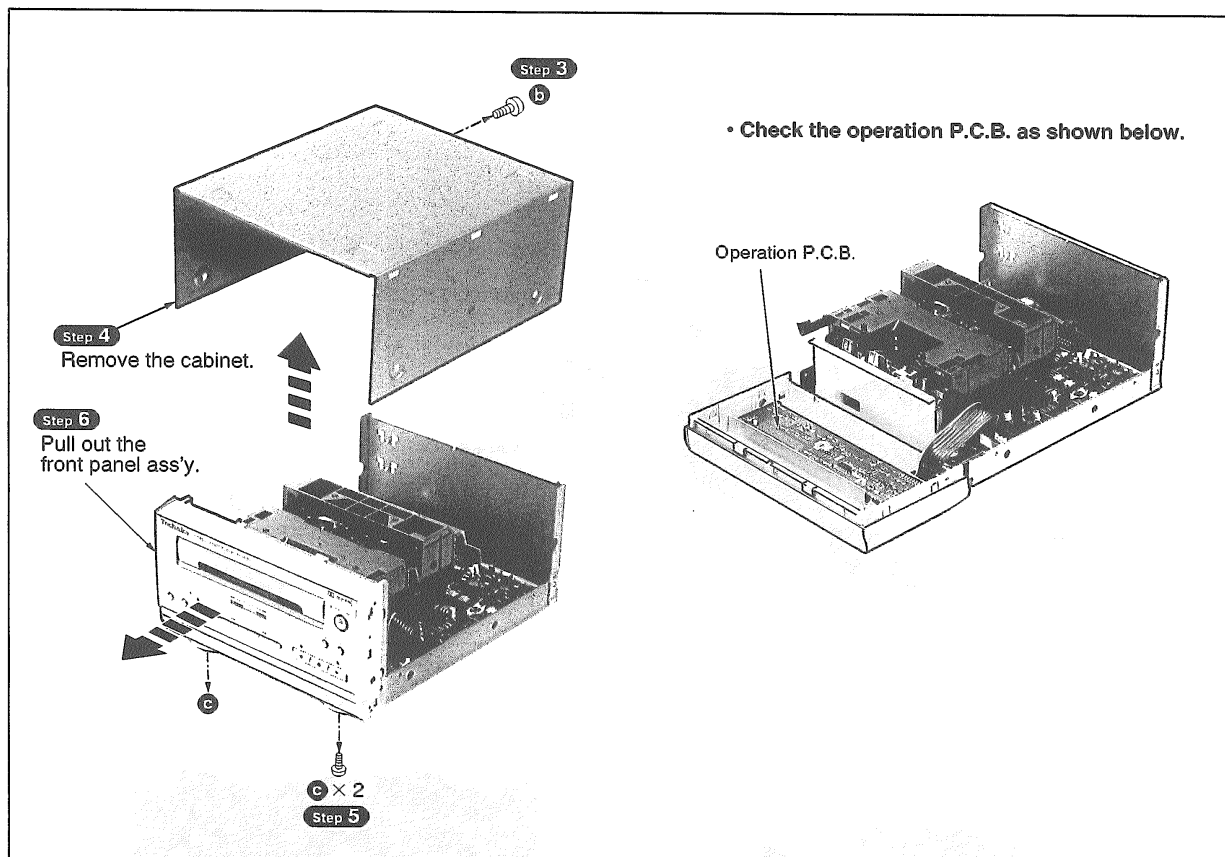
#### • Main Component Replacement Procedures

- |  |       |
|--|-------|
| 1. Replacement for the cassette holder ass'y.                          | 6~8.  |
| 2. Replacement for the belt, reel motor ass'y and capstan motor ass'y. | 8~10. |
| 3. Replacement for the parts mounted on mechanism P.C.B..              | 10.   |
| 4. Replacement for the head block and pinch roller ass'y.              | 10.   |

## ■ Checking Procedure for each P.C.B.

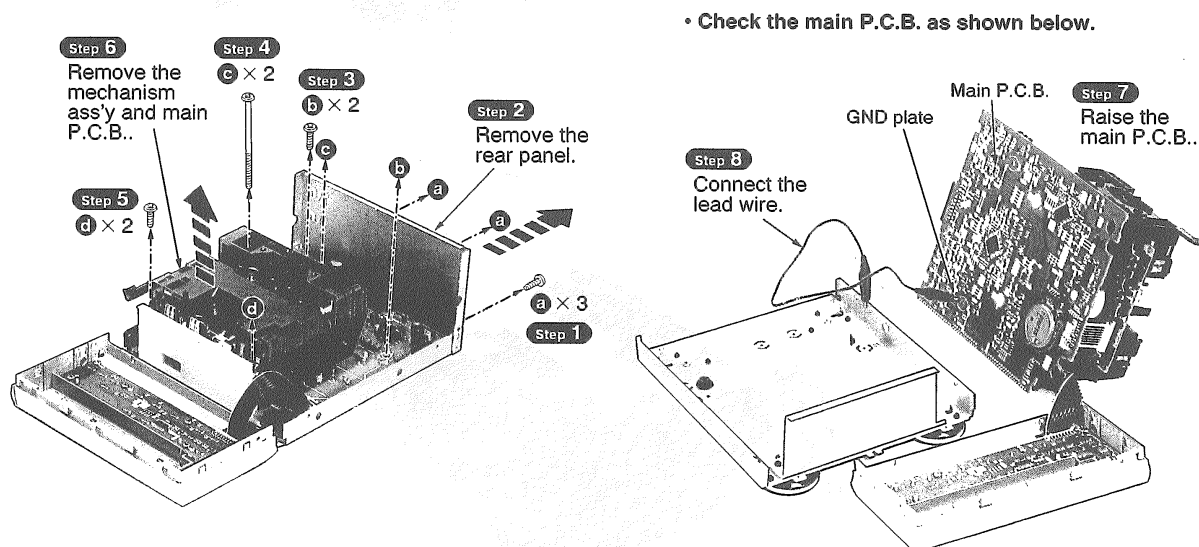
### 1. Checking for the operation P.C.B.





## 2. Checking for the main P.C.B.

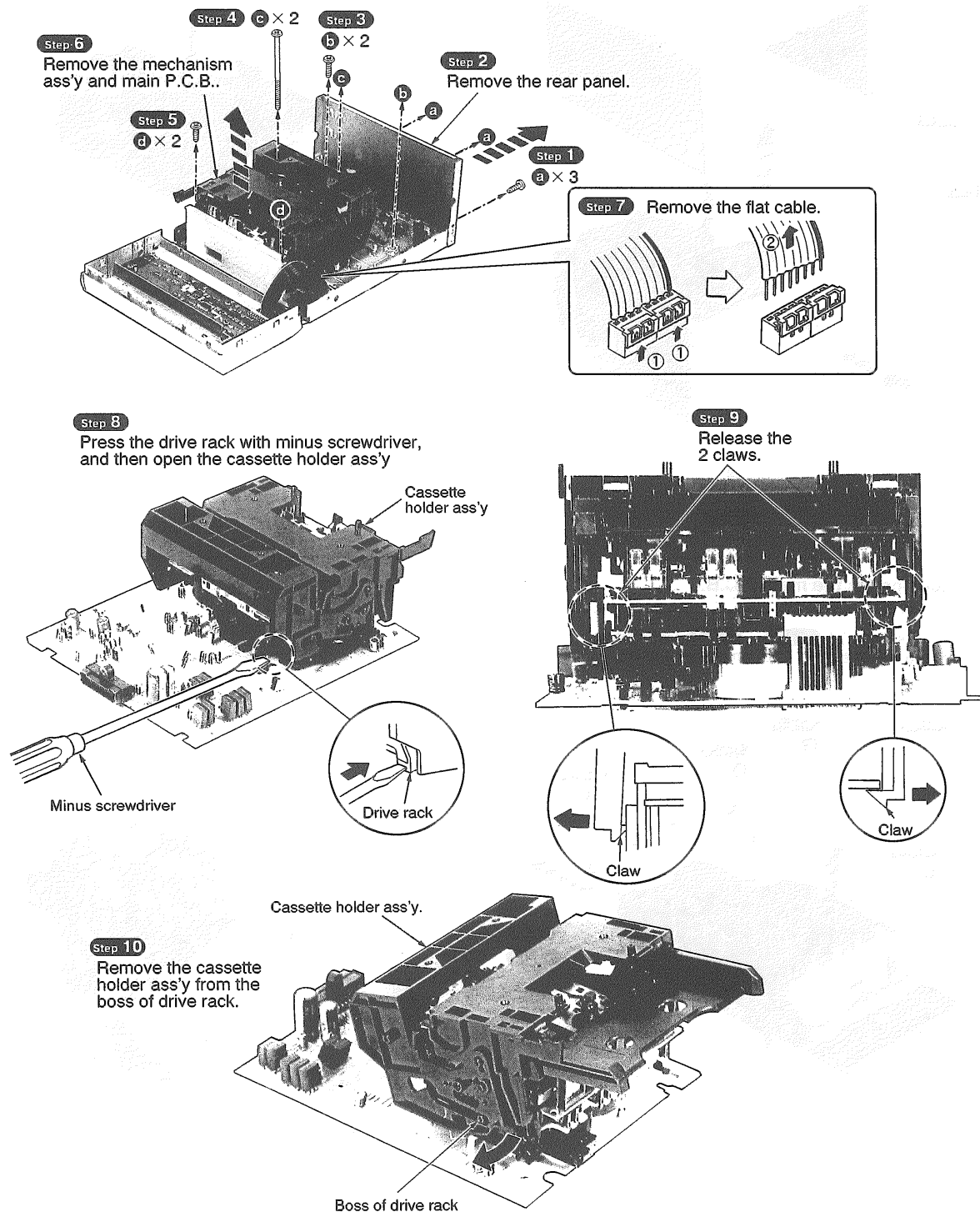
• Follow the item 1 ( **Step 1** ~ **Step 6** ) in checking procedures for each P.C.B. on pages 4 and 5.



## ■ Main Component Replacement Procedures

### 1. Replacement for the cassette holder ass'y

- Follow the item 1 ( **Step 1** ~ **Step 6** ) in checking procedures for each P.C.B. on pages 4 and 5.

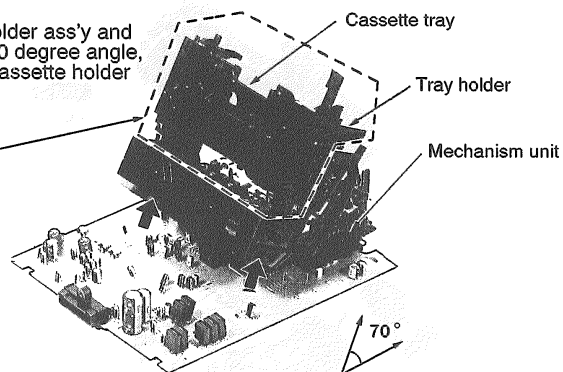


**Step 11**

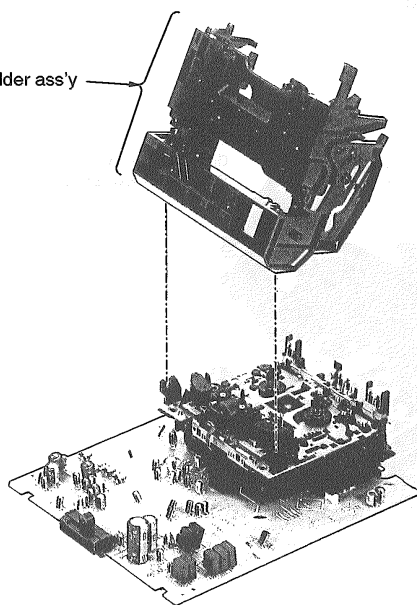
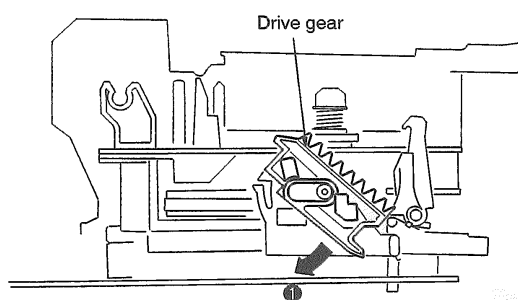
Locate the cassette holder ass'y and mechanism unit at a 70 degree angle, and then pull out the cassette holder ass'y.

**NOTE**

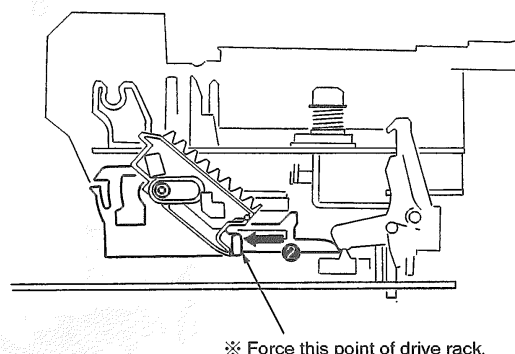
When removing the cassette holder ass'y, avoid to pull it with holding cassette tray or tray holder.



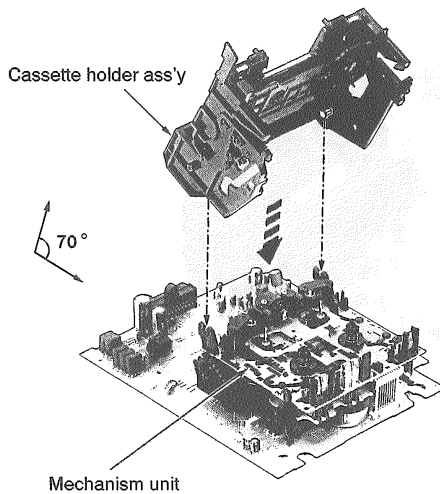
Cassette holder ass'y


**Installation of the cassette holder ass'y after replacement**
**Step 1**

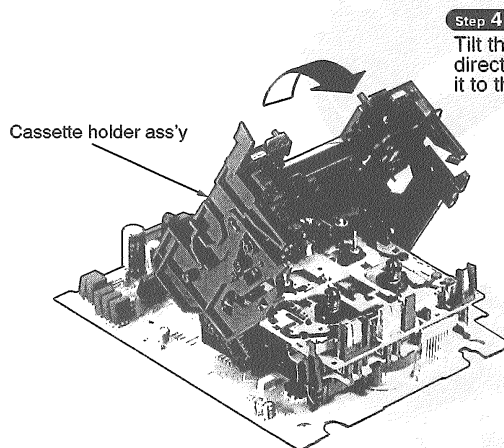
Tilt the drive gear in the direction of arrow ①.

**Step 2**

Force the drive rack fully in the direction of arrow ②.



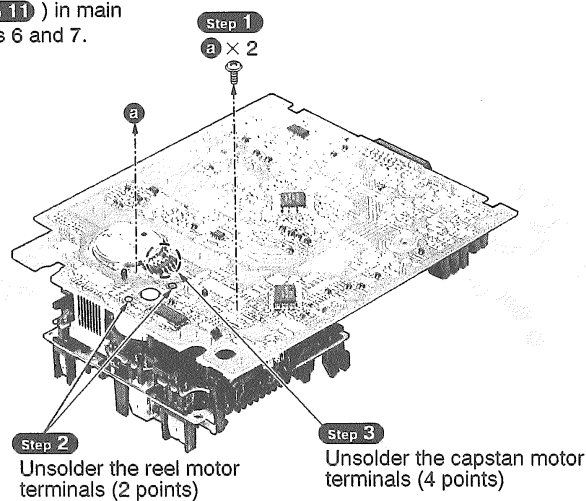
**Step 3**  
Locate the cassette holder ass'y and mechanism unit at a 70 degree angle, and then install the cassette holder ass'y.



**Step 4**  
Tilt the cassette holder ass'y in the direction of arrow, and then secure it to the mechanism ass'y.

## 2. Replacement for the belt, reel motor ass'y and capstan motor ass'y

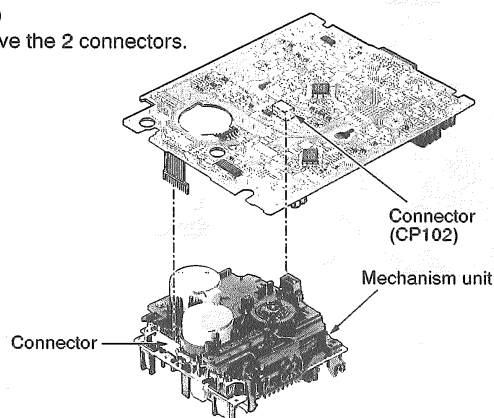
- Follow the item 1 ( **Step 1** ~ **Step 6** ) in checking procedures for each P.C.B. on pages 4 and 5.
- Follow the item 1 ( **Step 1** ~ **Step 11** ) in main component procedures on pages 6 and 7.



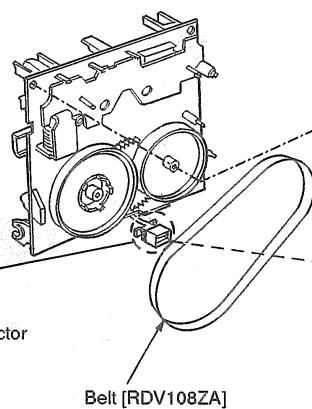
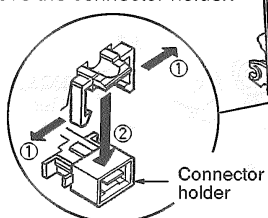


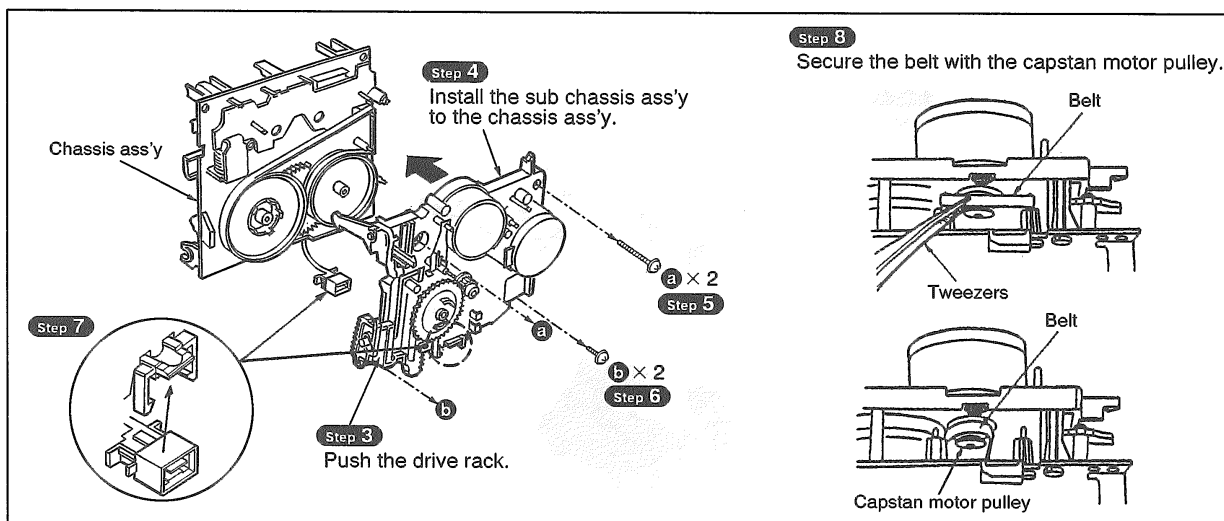
**Step 4**

Remove the 2 connectors.

**Step 5**

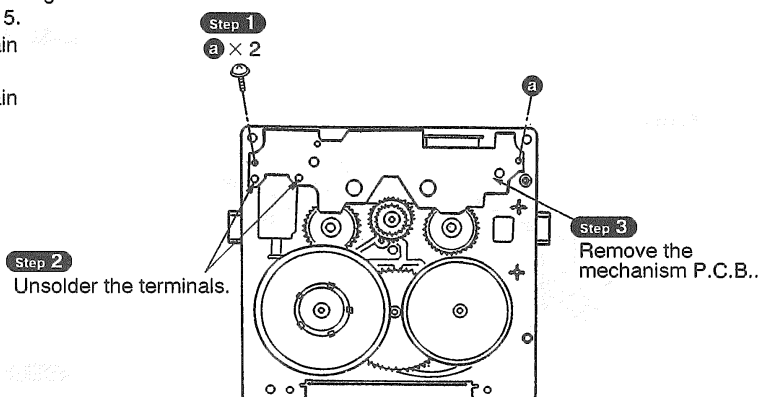
Remove the connector holder.

**Step 10** $d \times 4$ Reel motor ass'y  
[REM0043]Capstan motor ass'y  
[REM0036-1] $d$  $d$



### 3. Replacement for the parts mounted on mechanism P.C.B.

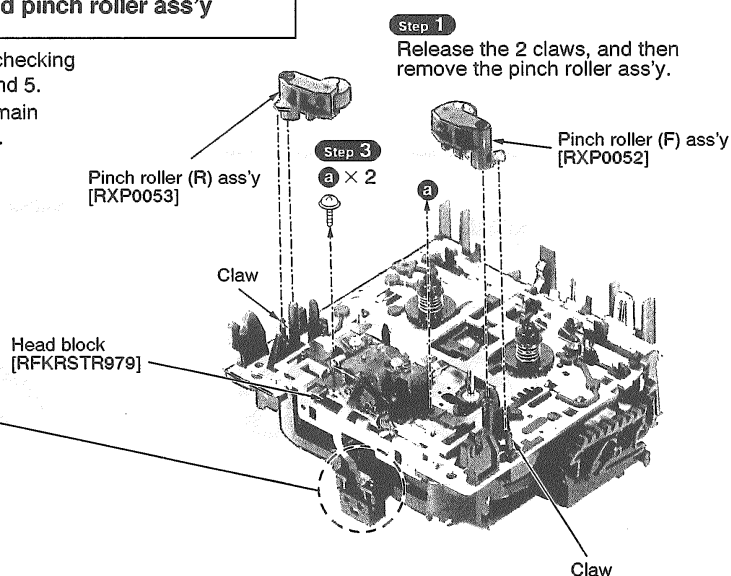
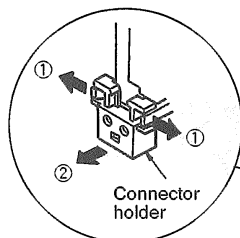
- Follow the item 1 ( **Step 1** ~ **Step 6** ) in checking procedures for each P.C.B. on pages 4 and 5.
- Follow the item 1 ( **Step 1** ~ **Step 11** ) in main component procedures on pages 6 and 7.
- Follow the item 2 ( **Step 1** ~ **Step 9** ) in main component procedures on pages 8 and 9.



### 4. Replacement for the head block and pinch roller ass'y

- Follow the item 1 ( **Step 1** ~ **Step 6** ) in checking procedures for each P.C.B. on pages 4 and 5.
- Follow the item 1 ( **Step 1** ~ **Step 11** ) in main component procedures on pages 6 and 7.

**Step 2**  
Remove the connector holder.

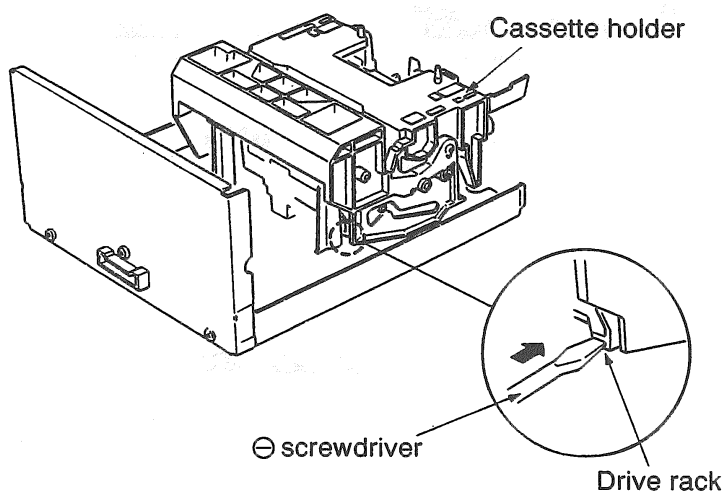


## ● Manually opening and closing the cassette holder assembly

- Follow the item 1 (Step 1 ~ Step 5) in checking procedures for each P.C.B. on pages 4 and 5.

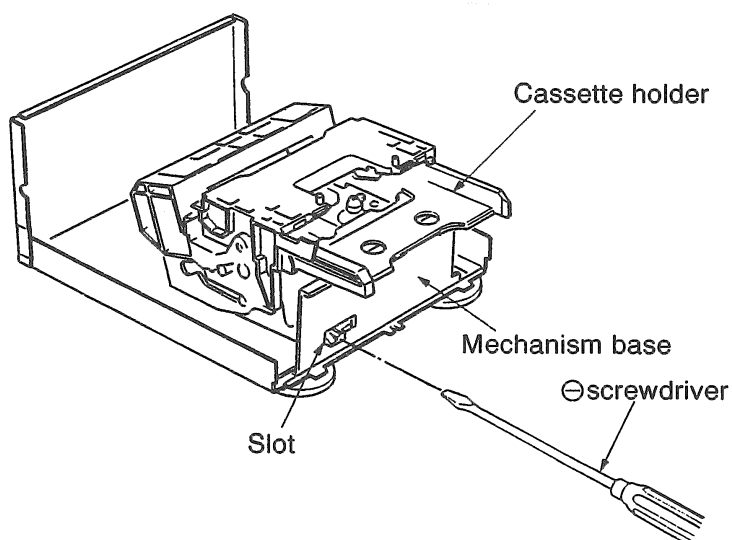
### OPENING

Push the drive rack in the direction of the arrow with a ⊖screwdriver.



### CLOSING

Push the drive rack back into position by inserting a ⊖screwdriver into the holes on the P.C.B.



## Measurements and Adjustments

This unit RS-HD81 is designed to operate on power supplied from the Amplifier (SE-HD51 or SE-HD81) through Tuner (ST-HD51 or ST-HD81).

When connecting the unit to other system components, do not connect to the Amplifier (SE-HD81) directly. Be sure to connect this unit through the Tuner (ST-HD51 or ST-HD81).

When operating the unit RS-HD81 alone for testing and servicing, without having power supplied from the Amplifier (SE-HD51 or SE-HD81) and Tuner (ST-HD51 or ST-HD81), use the following method.

### ● To Supply Power Source

1. Short three sections the test points TP602, A. GND, and TP702.
2. Apply 11 AC power to test points between TP601 and TP602 (GND), and TP603 and TP602 (GND).

Note: When operated alone, this unit automatically enter the TEST mode, causing indicators to blink.

### ● To Check Signals

Connect an oscilloscope or a built-in amplifier speaker between line output for Lch (TP201) and jumper (J118) A. GND, and line out for Rch (TP202) and jumper (J118) A. GND and check if the signals are outputting from this unit.

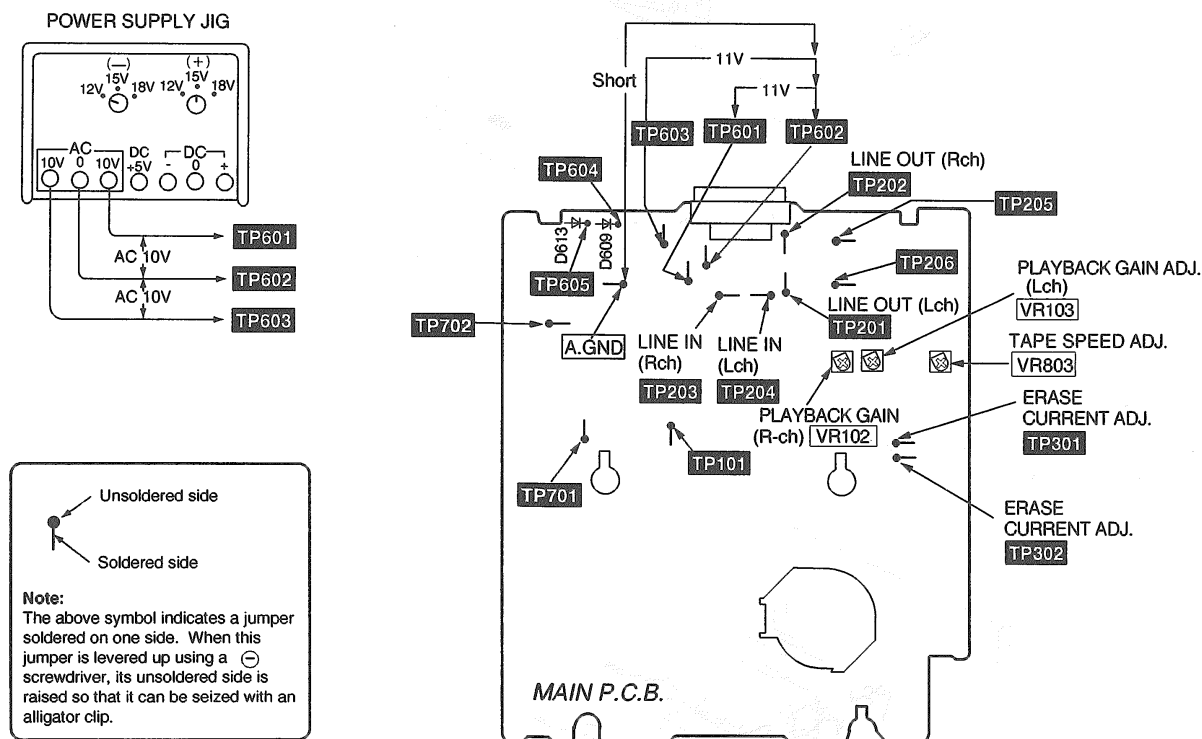


Fig. 1

#### Measurement Condition

- Dolby NR switch; OFF
- Make sure heads are clean.
- Make sure capstan and pressure roller are clean.
- Judgeable room temperature  $20 \pm 5^\circ\text{C}$  ( $68 \pm 9^\circ\text{F}$ )

#### Measuring instrument

- EVM (Electronic Voltmeter)
- AF oscillator
- Digital frequency counter

#### Test Tape

- Head azimuth adjustment (8kHz, -20dB); QZZCFM
- Tape speed adjustment (3kHz, -10dB); QZZCWAT
- Recording/ playback frequency response adjustment; QZZCFM (315Hz/0dB, 315Hz/-20dB, 12.5kHz-63Hz/-20dB)
- Normal blank tape
- CrO2 blank tape
- Metal blank tape

### HEAD AZIMUTH ADJUSTMENT

1. Connect the measuring instrument as shown in Fig. 2.
2. Replace azimuth screws for both forward and reverse direction after removing the screw-locking bond left on the head base.  
Fine adjustment of azimuth can not be performed with remaining the bond on the head base.  
(Supply part No. of azimuth adjusting screw: RHD17015)
3. Playback the azimuth adjustment portion (8kHz, -20dB) of test tape (QZZCFM). Adjust the azimuth adjusting screw until the outputs of the L/R-ch are maximized. (Refer to Fig. 3.)  
Make sure that the difference in the peak level between the left and right channels does not exceed 0.5dB.
4. Perform the same adjustment in reverse playback mode.

### Check of the level difference forward and reverse directions

5. Playback the playback gain adjustment portion (315 Hz, 0dB) of test tape (QZZCFM). Check if level difference between forward and reverse direction is within 1.5 dB.
6. After the adjustment, apply screwlock to the azimuth adjusting screw.

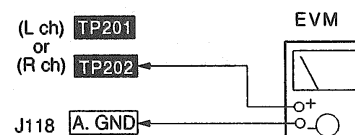


Fig. 2

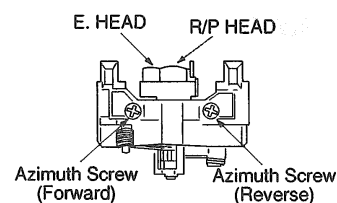


Fig. 3

### TAPE SPEED ADJUSTMENT

**Note:** When connecting the unit to other system components for testing, short the section between the test points TP701 and TP702 and turn on the entire system. (The unit is set to the TEST mode, indicators will blink.)

**Normal speed (Standard value: 3000 ± 45Hz)**

1. Connect the measuring instrument as shown in Fig. 4.
2. Playback the middle portion of the test tape (QZZCWAT).
3. Adjust VR803 for the output value shown below. (Refer to Fig. 1)

Adjustment target: 3000 ± 15Hz  
Standard value: 3000 ± 45Hz

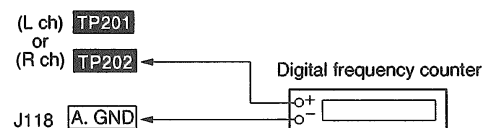


Fig. 4

**Note:** When connecting the unit to other system components, disconnect the short between the test points TP701 and TP702.

### PLAYBACK GAIN ADJUSTMENT

1. Connect the measuring instrument as shown in Fig. 5.
2. Find the start of the 315Hz/0dB section of the test tape (QZZCFM), insert the tape, and play it back (FWD).
3. Adjust VR103 (Lch) [VR102 (Rch)] so that the output is within the standard value. (Refer to Fig. 1).

Standard value: 265mV ± 300mV

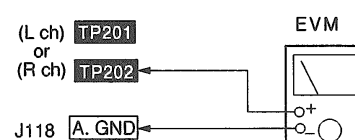


Fig. 5

### ERASE CURRENT CONFIRMATION

1. Connect the measuring instrument as shown in Fig. 6.
2. Insert the blank tape, and press the REC PAUSE button.
3. Check if the output at this time between the erase current confirmation point TP301 and TP302 (the output on both edged of R313) is within the standard value.

Standard value	EVM reading
Normal tape : 75 ± 25 mA	(75 ± 25 mA)
CrO <sub>2</sub> tape : 110 ± 25 mA	(110 ± 25 mA)
Metal tape : 180 ± 25 mA	(180 ± 25 mA)

**Note:** The test tape is not required when confirming the erase current.

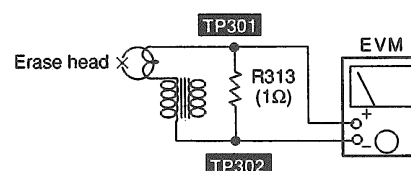


Fig. 6

**Playback frequency response check**

1. Connect the measuring instrument as shown in Fig. 7
2. Playback the 315Hz/-20dB and 12.5 kHz to 63 Hz/-20dB sections of the test tape (QZZCFM) and then, using the 315 Hz/-20dB playback output as a reference (0 dB), confirm that the playback frequency response is within the range shown in Fig. 8.

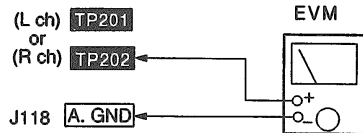


Fig. 7

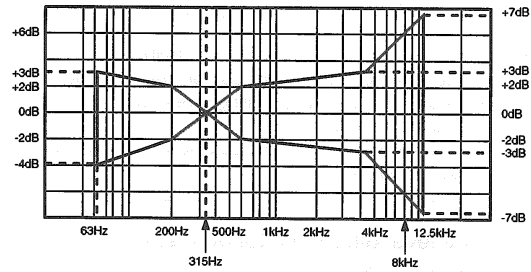


Fig. 8

**Recording/playback frequency response and gain check****Normal tape check**

1. Connect the measuring instrument as shown in Fig. 9.
2. Insert a Normal-type blank tape.
3. Record signals at 50 Hz, 100Hz, 200 Hz, 500 Hz, 1kHz, 2kHz, 10kHz and 12.5 kHz (28mV).
4. Set the playback frequency of the recorded signals at 1kHz as the reference response (0 dB).
5. Playback the recorded signals to confirm that the output is within the range of the overall frequency response shown in Fig. 10.

**CrO<sub>2</sub>/ Metal tape check**

6. Repeat steps 3 to 5 for each tape and confirm that the output for each is within the range of the overall frequency response shown in Fig. 11.

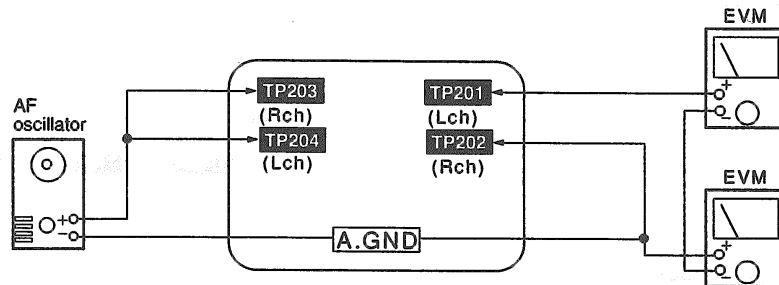


Fig. 9

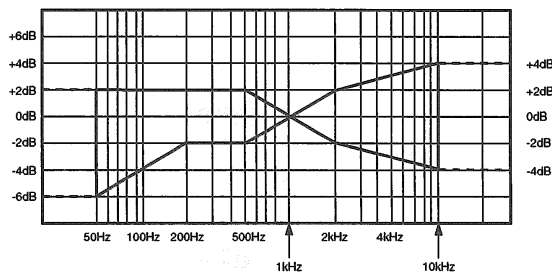
**Normal Overall frequency response chart (NR OUT)**

Fig. 10

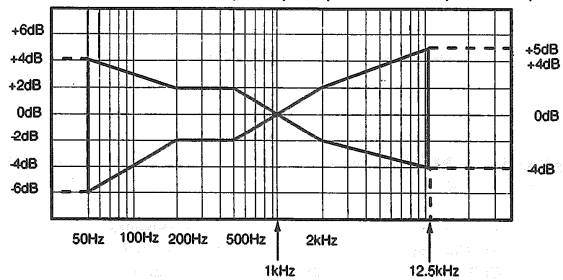
**CrO<sub>2</sub>/ Metal Overall frequency response chart (NR OUT)**

Fig. 11

## Service Mode Function of Cassette Mechanism

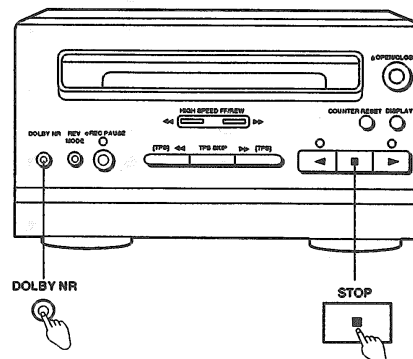
This unit is equipped with a service mode function of cassette mechanism using the LED indicators [R. PLAY (◀), F. PLAY (▶), REW (◀◀), FF (▶▶)]. Use this function during maintenance to check faults of the items below.

### • Cassette tapes to be prepared

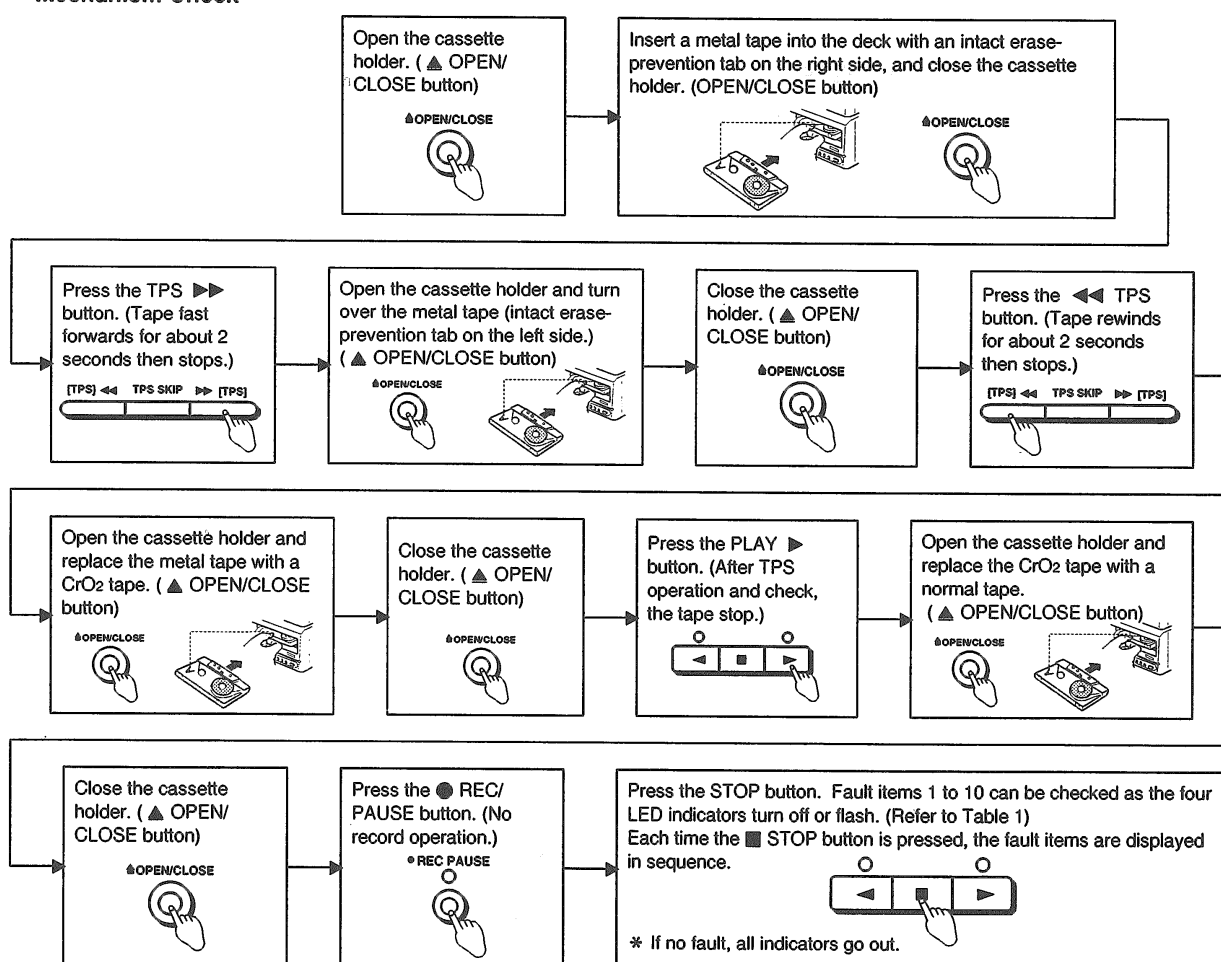
- Metal tape: Recorded music tape with only one erase-prevention tab intact (use middle portion of the tape).  
 Normal tape: Recorded music tape with both erase-prevention tabs intact (use middle portion of the tape).  
 CrO<sub>2</sub> tape: Recorded music tape with both erase-prevention tabs intact (use middle portion of the tape).

### • Selecting Service Mode

- Turn on the power to the unit. (If RS-HD81 unit is removed from system, turn it on according to the procedure on page 12.)
- Check that no tape is inserted in the cassette deck.  
 Press the DOLBY NR button for about 2 seconds, and keep pressing it, also press the STOP button for about 2 seconds. (Service mode cannot be selected with a tape inserted in the cassette deck.)
- The LED indicator for REC PAUSE flashes, the service mode has been activated.

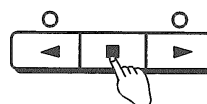


### • Mechanism Check



### • Exiting-Self-Check Mode

- Press the STOP button for more than 5 seconds. (Diagnostic contents stored in memory are erased.)
- Remove the cassette tape from the cassette holder.
- Turn off the unit.



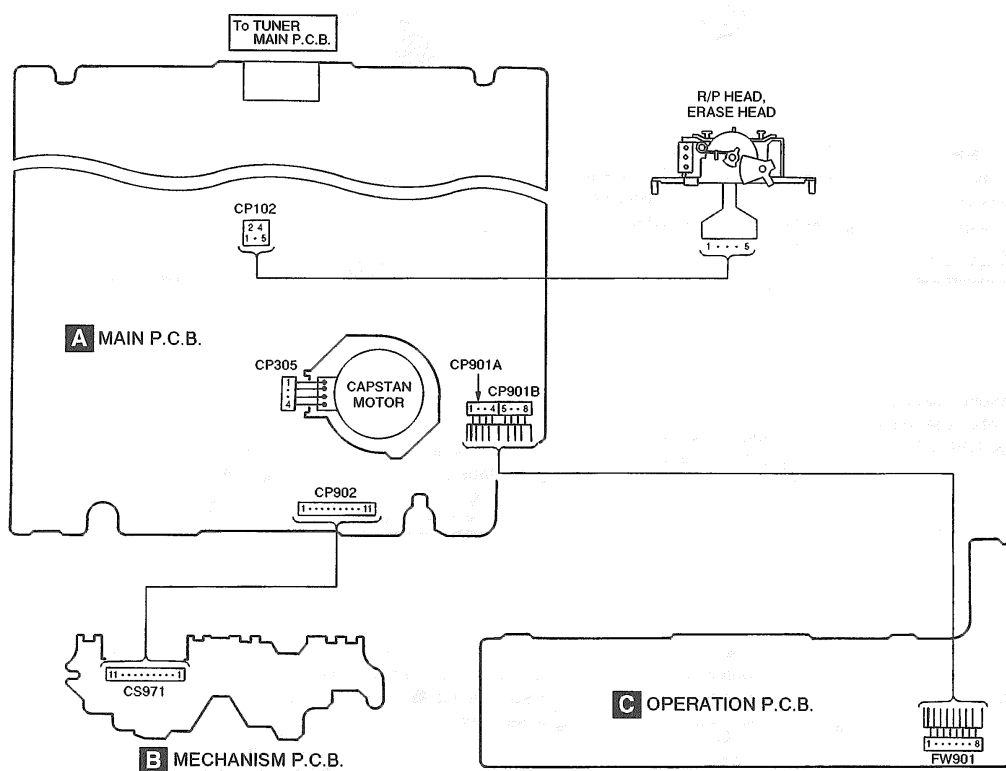
No.	LED indicator status (off/flashing)				Fault location
	◀	▶	◀◀	▶▶	
1.	—	—	—	●	MODE detect switch
2.	—	—	●	—	REC prevention switch
3.	—	—	●	●	Half detect switch
4.	—	●	—	—	Deck OPEN switch
5.	—	●	—	●	Deck CLOSE switch
6.	—	●	●	—	CrO <sub>2</sub> tape detect switch
7.	—	●	●	●	Metal tape detect switch
8.	●	—	—	—	Reel pulse detect system (Hall IC, etc.)
9.	●	—	—	●	TPS operation
10.	●	—	●	—	Reel motor

**Notes:**

"●": Flashing

"—": off

\* If no fault, all indicators go out.

**Table 1: Service Mode Diagnostic Items****■ Wiring Connection Diagram**







## ■ Schematic Diagram (Parts list on pages 28 ~ 30.)

- This schematic diagram may be modified at any time with development of new technology.

	Page
<b>A</b> MAIN CIRCUIT .....	18~20
<b>B</b> MECHANISM CIRCUIT .....	19
<b>C</b> OPERATION CIRCUIT .....	21

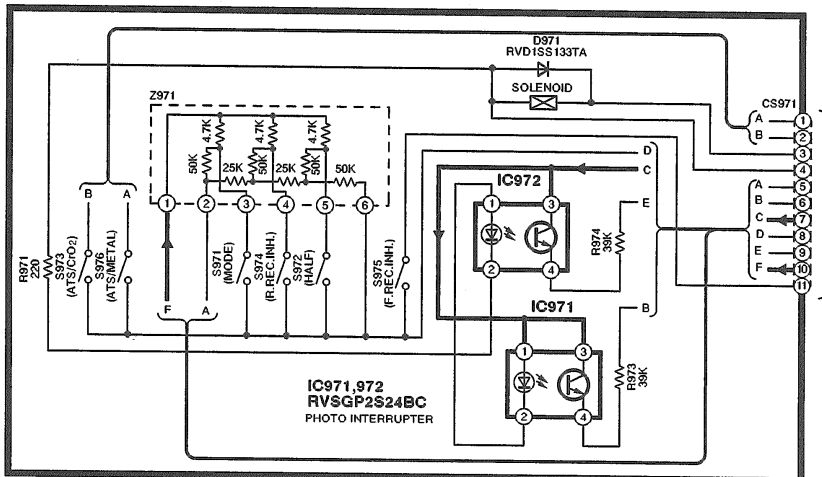
### Notes:

- **S803**: Cassette holder open detection switch in "off" position.
- **S804**: Cassette holder close detection switch in "off" position.
- **S900**: Stop (■) switch.
- **S901**: Dolby noise-reduction switch (DOLBY NR).
- **S902**: Rewind tape program sensor switch (◀◀ [TPS]).
- **S903**: Reverse-side playback switch (◀).
- **S904**: TPS skip switch (TPS SKIP).
- **S905**: Forward-side playback switch (▶).
- **S906**: Fast forward tape program sensor switch (▶▶ [TPS]).
- **S909**: Rec pause switch (● REC PAUSE).
- **S910**: Cassette holder open/ close switch (▲ OPEN/ CLOSE).
- **S911**: Counter display switch (DISPLAY).
- **S912**: Counter reset switch (RESET).
- **S915**: Reverse-mode select switch (REV. MODE).
- **S971**: Mode switch in "off" position.
- **S972**: Half switch in "off" position.
- **S973**: ATS (CrO<sub>2</sub>) switch in "off" position.
- **S974**: Reverse rec. inhibit switch in "off" position.
- **S975**: Forward rec. inhibit switch in "off" position.
- **S976**: ATS (Metal) switch in "off" position.
- Resistance are in ohms (Ω), 1/4 watt unless specified otherwise.  
1K=1,000 (Ω), 1M=1,000 (Ω)
- Capacity are in micro-farads (μF) unless specified otherwise.
- All voltage values shown in circuitry are under no signal condition and playback mode with volume control at minimum position otherwise specified.  
( ).....Voltage values at record mode.  
For measurement us EVM.
- Voltage values and waveforms are measured as indicated in the schematic diagram when test points between **TP604** and **TP605**, and between **A. GND** and **TP602** are shorted.
- Important safety notice:  
Components identified by ▲ mark have special characteristics important for safety.  
When replacing any of components, be sure to use only manufacture's specified parts shown in the parts list.
-  : Positive voltage line
-  : Negative voltage line
-  : Playback signal line
-  : Recording signal line

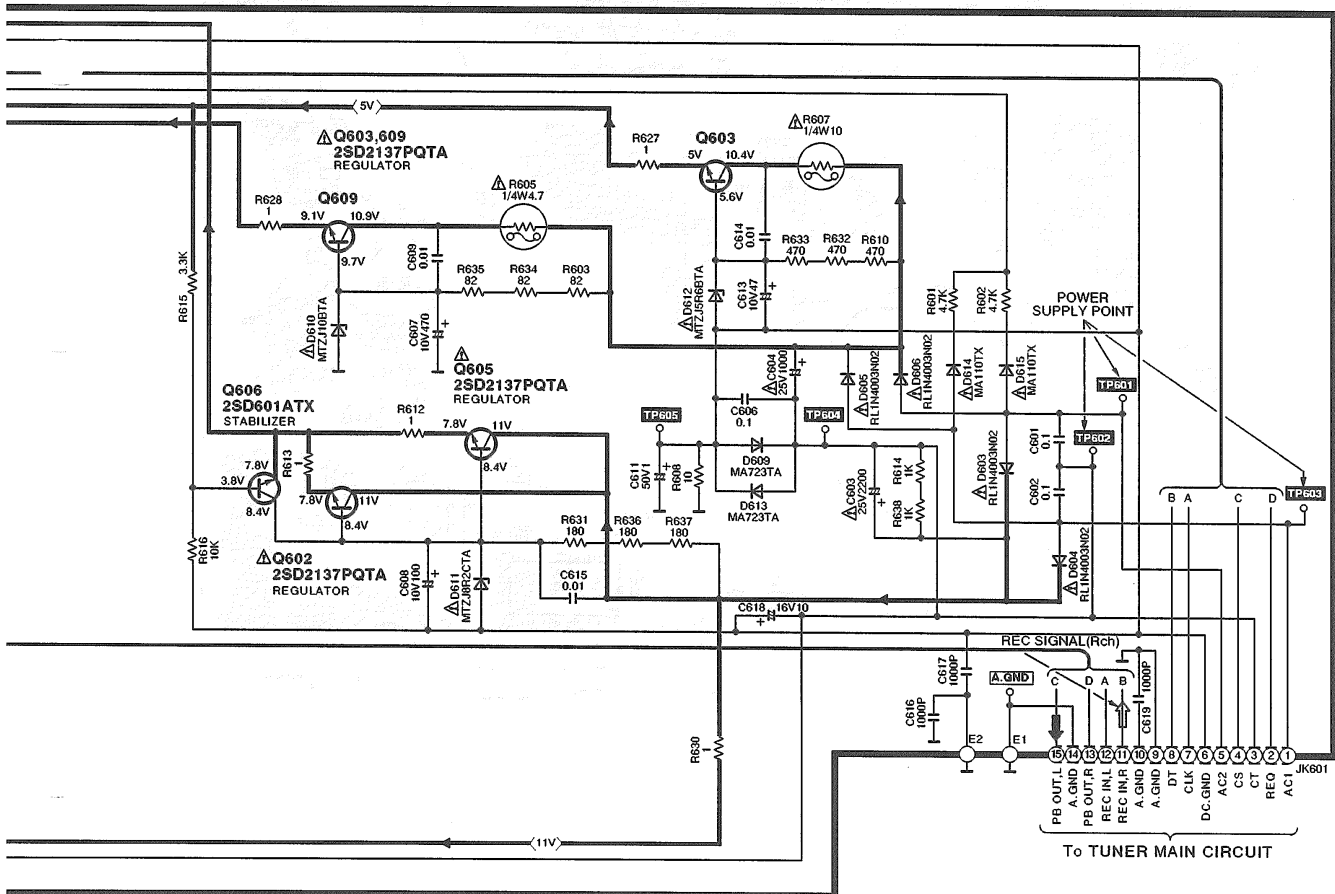
### • Caution!

- IC and LSI are sensitive to static electricity.
- Secondary trouble can be prevented by taking care during repair.
- Cover the parts boxes made of plastics with aluminum foil.
- Ground the soldering iron.
- Put a conductive mat on the work table.
- Do not touch the legs of IC or LSI with the fingers directly.





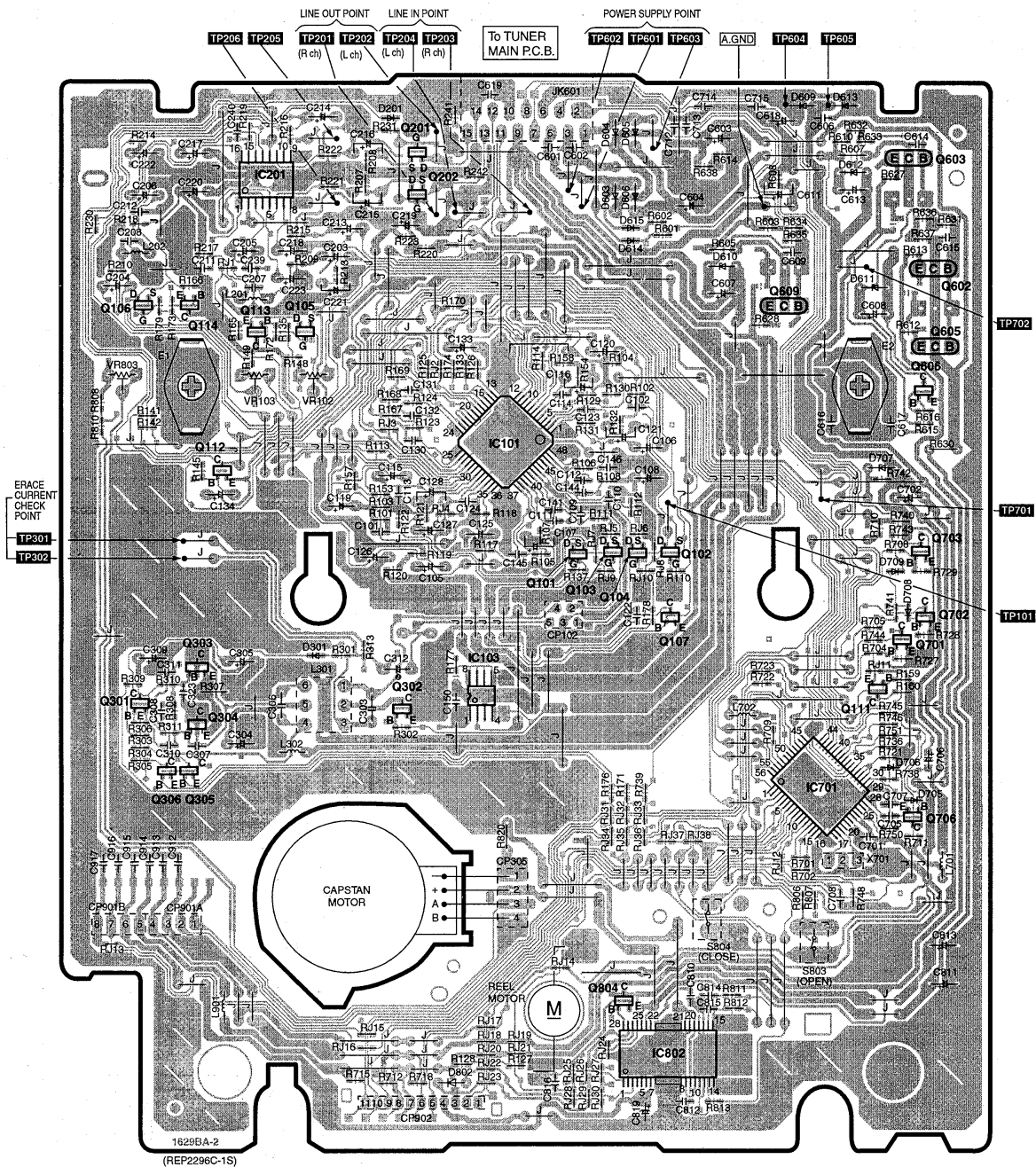




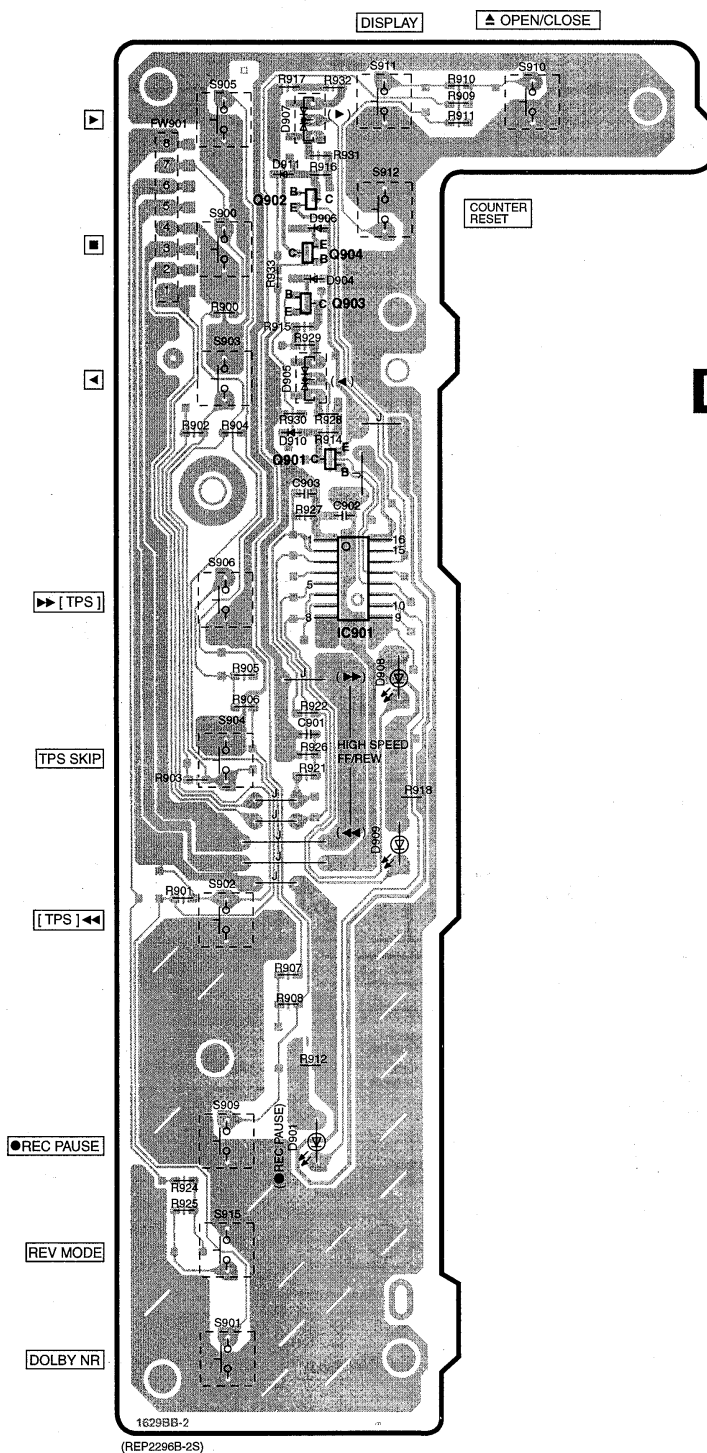
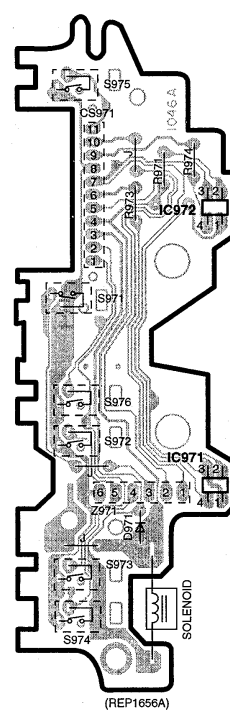
# Printed Circuit Board Diagram

(This printed circuit board diagram may be modified at any time with the development of new technology.)

## A MAIN P.C.B.

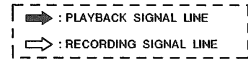


## C OPERATION P.C.B.

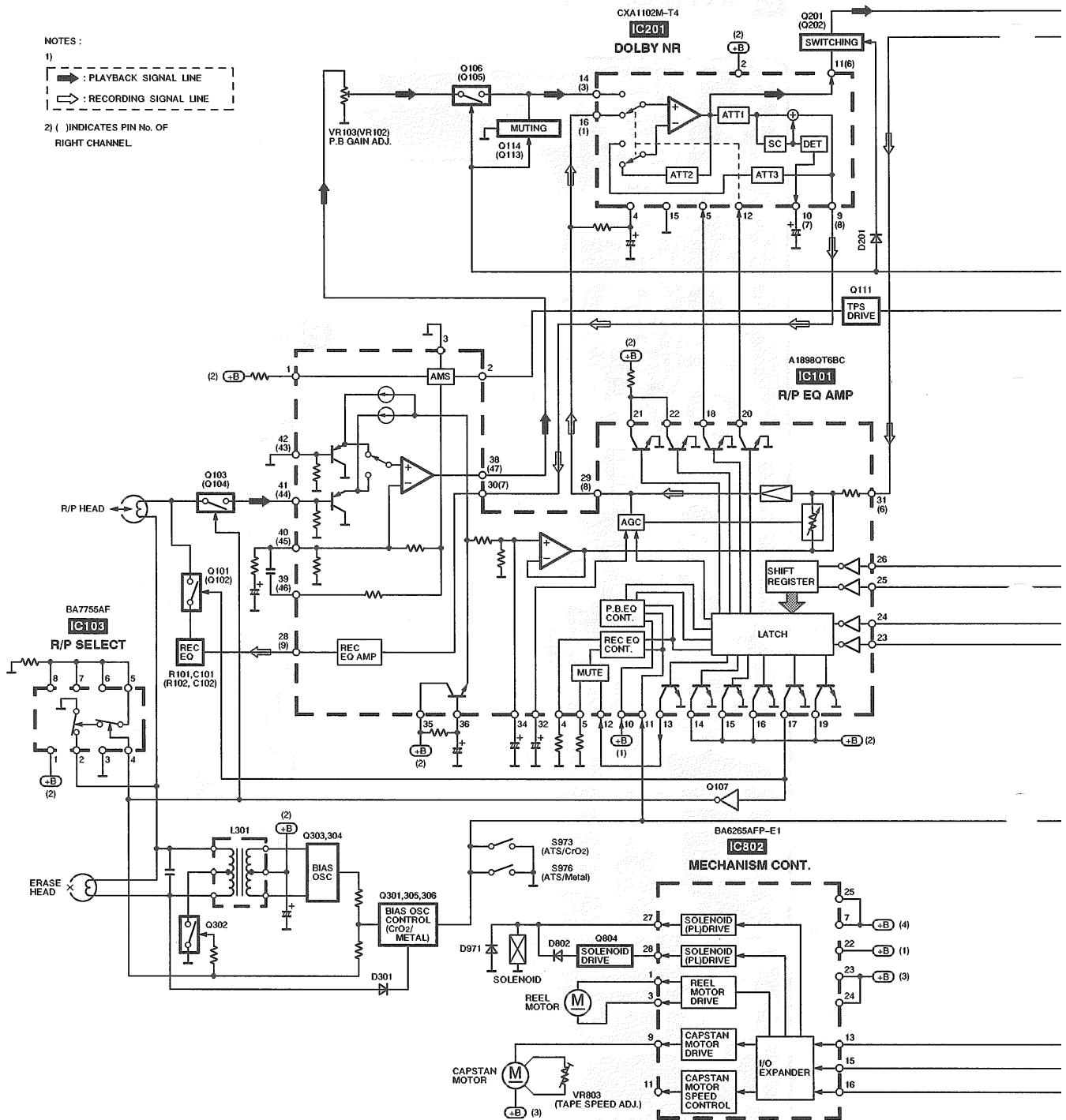
**B MECHANISM P.C.B.**

## NOTES :

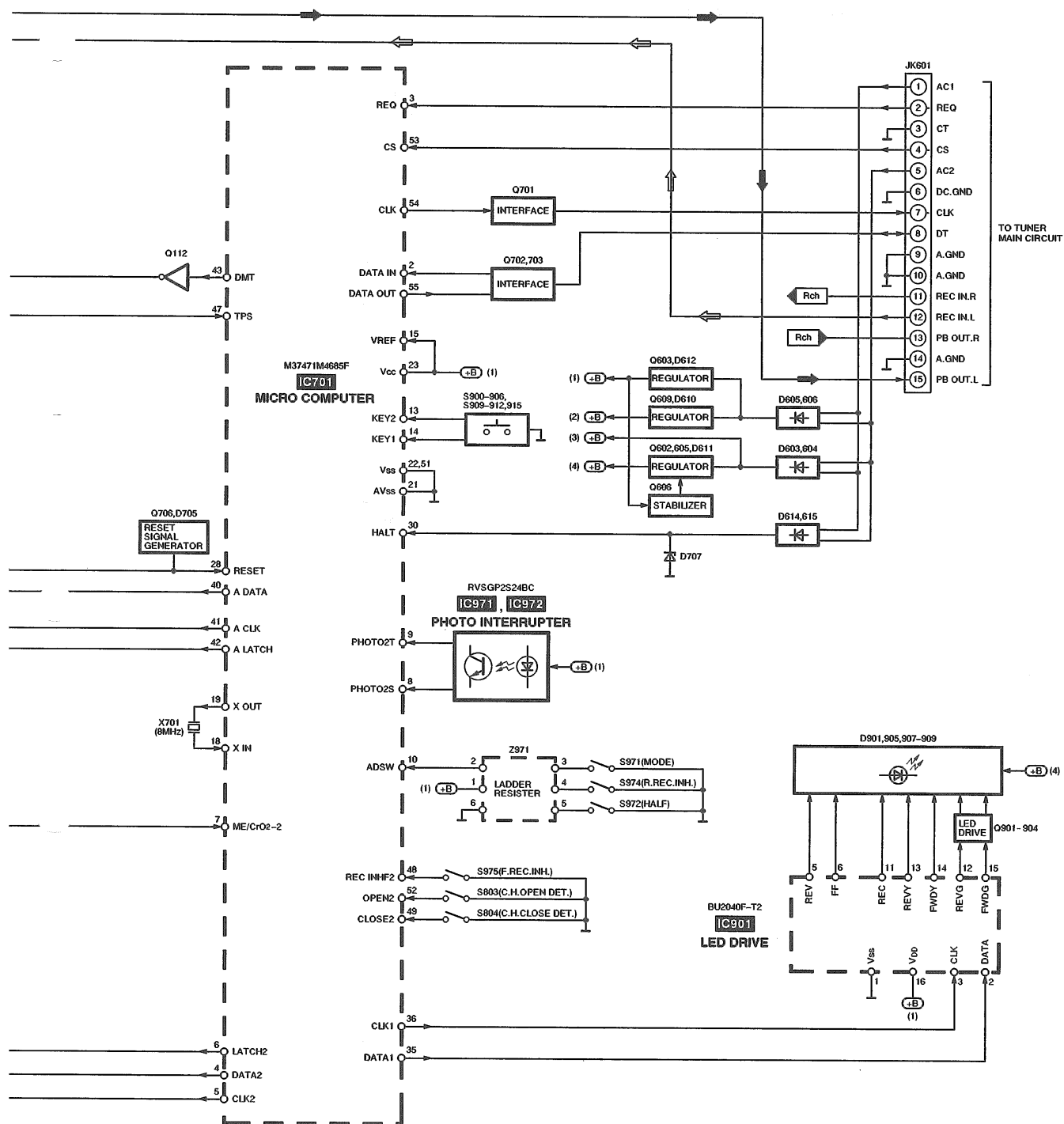
1)



2) ( ) INDICATES PIN No. OF  
RIGHT CHANNEL.







## ■ Terminal Function of IC's

### ● IC701 (M37471M4685F): MICRO COMPUTER

Pin No.	Mark	I/O	Function
1	NC	—	Not used
2	DATA IN	I	Serial data input
3	REQ	I	Request signal input
4	DATA2	O	Mechanism control data output
5	CLK2	O	Mechanism control clock output
6	LATCH2	O	Mechanism control latch signal output
7	ME/CrO2-2	I	Tape select switch input
8	PHOTO2_S	I	Reverse side reel pulse input
9	PHOTO2_T	I	Forward side reel pulse input
10	AD_SW	I	Mechanism switch signal input
11	PHOTO1_S	I	Reverse side reel pulse input
12	PHOTO1_T	I	Forward side reel pulse input
13	KEY2	I	Key switch signal input
14	KEY1	I	
15	VREF	I	Reference voltage input
16	NC	—	Not used
17	NC	—	Not used
18	XIN	I	Clock input
19	XOUT	O	Clock output
20	NC	—	Not used
21	AVSS	—	Connect to GND
22	VSS	—	Connect to GND
23	VCC	—	Power supply (+5V)
24	NC	—	Not used
25	TEST	I	Test mode select (Not used)
26	CP_SEL1	—	Not used
27	NC	—	Not used
28	RESET	I	Reset signal input

Pin No.	Mark	I/O	Function
29	NC	—	Not used
30	HALT	I	AC power source detect signal input
31	MODE1	I	Mode detect switch signal input
32	CrO2-1	I	Tape select switch signal input
33	HALF1	I	Half detect switch signal input
34	NC	—	Not used
35	DATA1	O	Control data output
36	CLK1	O	Control clock output
37	LATCH1	O	Mechanism control latch signal output
38	CLOSE1	I	Cassette holder close detect switch signal input
39	OPEN1	I	Cassette holder open detect switch signal input
40	A DATA	O	Serial data output
41	A CLK	O	Serial clock output
42	A LATCH	O	Latch signal output
43	DMT	O	Muting control signal output
44	NC	—	Not used
45	NC	—	Not used
46	CP_SEL2	—	Not used
47	TPS	I	TPS signal input
48	RECINH F_2	I	Record prevention tab detect switch signal input
49	CLOSE2	I	Cassette holder close detect switch signal input
50	NC	—	Not used
51	VSS	—	GND terminal
52	OPEN2	I	Cassette holder open detect switch signal input
53	CS	I	Serial data control signal input
54	CLK	O	Serial clock output
55	DATA OUT	O	Serial data output
56	NC	—	Not used

**● IC802 (BA6265AFP-E1): MECHANISM CONTROL**

Pin No.	Mark	I/O	Function
1	RM(-)	O	Reel motor drive (-) output terminal
2	RNF	-	GND terminal
3	RM(+)	O	Reel motor drive (+) output terminal
4	NC	-	Not used, connected to GND
5	NC		
6	NC		
7	VCC2	I	Power supply terminal
8	CPM GND	-	GND terminal
9	CPM	O	Capstan motor drive output terminal
10	NC	-	Not used, connected to pin11
11	CPM SW	O	Capstan speed select SW output terminal
12	NC	-	Not used, connected to pin 11
13	LATCH	I	I/O expander latch signal input terminal
14	S0	O	I/O expander serial output terminal

Pin No.	Mark	I/O	Function
15	DATA	I	I/O expander data signal input terminal
16	CLK	I	I/O expander clock signal input terminal
17	NC	-	Not used, connected to GND
18	NC	-	
19	NC	-	Not used, connected to pin 9
20	GND	-	GND terminal
21	GND	-	GND terminal
22	VCC1	I	Power supply terminal
23	VCC3	I	Power supply terminal
24	VCC3	I	Power supply terminal
25	NC	-	Not used, connected to power supply
26	GND	-	GND terminal
27	PL 15V	O	Plunger output terminal(15V)
28	PL 7.5V	O	Plunger output terminal(7.5V)

**■ Type Illustrations of IC's Transistors and Diodes**

<b>BA7755AF</b> 	<b>CXA1102M-T4</b> <b>BU2040F-T2</b> 	<b>BA6265AFP-E1</b> 	<b>A1898QT6BC</b> 	<b>M37471M4685F</b> 	<b>RVSGP2S24BC</b> 
<b>DTA114EUT106</b> <b>DTC114EUT106</b> 		<b>2SB709ATX</b> <b>2SD1328TX</b> <b>2SD601ARTX</b> <b>2SD601ATX</b> <b>UN5214TX</b>	<b>2SJ106GBT85L</b> <b>2SJ163PQRTX</b> 	<b>2SD874QRSTX</b> 	<b>2SD2137PQTA</b> 
<b>RL1N4003N02</b> 	<b>MA188TA</b> 	<b>MA723TA</b> <b>RVD1SS133TA</b> 		<b>MTZJ10BTA</b> <b>MTZJ5R1BTA</b> <b>MTZJ5R6BTA</b> <b>MTZJ8R2CTA</b>	<b>MA110TX</b> 
<b>SLR-305VC</b> 	<b>SPR-305MDTF</b> 				

## ■ Replacement Parts List

Notes: \*Important safety notice:

Components identified by  $\Delta$  mark have special characteristics important for safety.

Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.

When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.

\* The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.) Parts without these indications can be used for all areas.

\* Capacity values are in microfarads ( $\mu$ F) unless specified otherwise, P=Pico-farads (pF) F=Farads (F)

\* Resistance values are in ohms, unless specified otherwise, 1K=1,000 (OHM), 1M=1,000k (OHM)

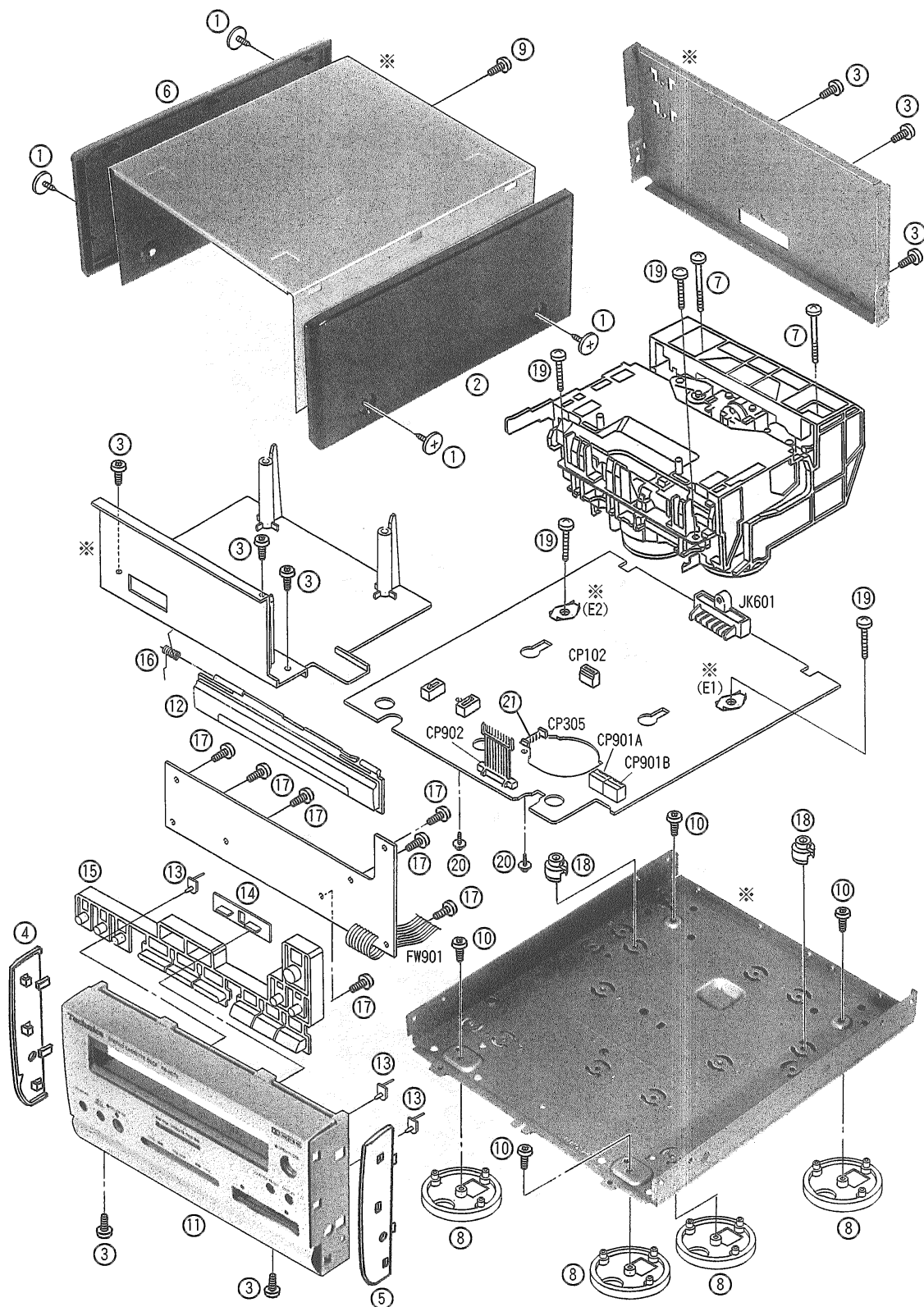
Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
1	RHD30073-K	SCREW	4	
2	RGK0809-1M	SIDE PANEL (R)	1	
3	XTBS3+8JFZ1	SCREW	8	
4	RGK0810-N3	SIDE ORNAMENT (L)	1	
5	RGK0811-N3	SIDE ORNAMENT (R)	1	
6	RGK0808-1M	SIDE PANEL (L)	1	
7	RHD30069	SCREW	2	
8	RKA0076-N	FOOT	4	
9	XTBS3+10JFZ1	SCREW	1	
10	XTB3+6G	SCREW	4	
11	RFKGRSHD81-S	FRONT PANEL ASS'Y	1	
12	RFKRSHD7-N	CASSETTE DOOR ASS'Y	1	
13	RGL0331-Q	PANEL LIGHT (A)	3	
14	RGL0332-Q	PANEL LIGHT (B)	1	
15	RGUI391-S	BUTTON	1	
16	RMB0478	CASSETTE DOOR SPRING	1	
17	XTBS26+8J	SCREW	7	
18	SHE170-2	P.C.B. SUPPORT	2	
19	XTB3+12JFZ	SCREW	4	
20	XTW2+6S	SCREW	2	
21	RJR0113	CONNECTOR (4P) (CP305)	1	
206	RFKRSTR979	HEAD BLOCK ASS'Y	1	
206-1	RHD17015	AZIMUTH SCREW	2	
206-2	RMB0352-1	SPRING	1	
206-3	RMQ0360A	CONNECTOR HOLDER	1	
207	RDV1082A	BELT	1	
208	RDK0019A-1J	MAIN GEAR	1	
220	RXG0036	REEL TABLE GEAR	2	
221	RXL0106	IDLER LEVER	1	
222	RXP0052	PINCH ROLLER (F) ASS'Y	1	
222-1	RMB0259	SPRING	1	
223	RXP0053	PINCH ROLLER (R) ASS'Y	1	
223-1	RMB0260	SPRING	1	
224	RDG0206-1	GEAR	1	
225	RDG0209A	GEAR	1	
226	REM0036-1	CAPSTAN MOTOR ASS'Y	1	
227	REM0043	REEL MOTOR ASS'Y	1	
228	RHD26013	SCREW	4	
229	RMQ0537	DRIVE GEAR	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
231	RXG0037	GEAR ASS'Y	1	
232	RMQ0536	DRIVE RACK	1	
233	RYF0334B-K3	CASSETTE HOLDER	1	
233-1	RMQ0310	SPRING	2	
233-2	RMB0397	SPRING	1	
239	XTW2+6S	SCREW	2	
240	RXR0018	REEL TABLE	2	
241	XTW2+5L	SCREW	2	
C101,02	ECUV1H221KBN	50V 220P	2	
C105,06	ECEA1EKA4R7B	25V 4.7U	2	
C107,08	ECEA0JKA470B	6.3V 47UF	2	
C109,10	ECUV1H561KBN	50V 560P	2	
C111,12	ECUV1E183KBN	25V 0.018U	2	
C113,14	ECUV1H331KBN	50V 330P	2	
C115,16	ECEA1EKA4R7B	25V 4.7U	2	
C119,20	ECEA1EKA4R7B	25V 4.7U	2	
C121	ECEA1HKA33B	50V 0.33UF	1	
C122	ECUV1E223KBN	25V 0.022U	1	
C123	ECUV1E153KBN	25V 0.015U	1	
C124	ECUV1H102KBN	50V 1000P	1	
C125	ECEA1AKA220B	10V 22U	1	
C126	RCE1AKA101BG	10V 100U	1	
C127	RCE1CKA100BG	16V 10U	1	
C128	ECEA0JKA470B	6.3V 47UF	1	
C130-32	ECUV1H331KBN	50V 330P	3	
C133	ECEA1HKA010B	50V 1U	1	
C134	RCE1HKA3R3BG	50V 3.3U	1	
C141	ECUV1H471KBN	50V 470P	1	
C144	ECUV1H471KBN	50V 470P	1	
C145,46	ECUV1H332KBN	50V 3300P	2	
C150	ECUV1E104ZFN	25V 0.1U	1	
C203,04	ECEA1EKA4R7B	25V 4.7U	2	
C205,06	ECEA1HKA010B	50V 1U	2	
C207,08	ECUV1H820JCN	50V 82P	2	
C211,12	ECUV1H152KBN	50V 1500P	2	
C213,14	ECEA1EKA4R7B	25V 4.7U	2	
C215,16	RCE1CKA100BG	16V 10U	2	
C217,18	ECEA1HKA68B	50V 0.68U	2	
C219	ECEA1CKA101B	16V 100U	1	
C220	ECA1AM471B	16V 470U	1	
C221,22	ECEA1HKA68B	50V 0.68U	2	
C223	RCE1CKA100BG	16V 10U	1	
C239,40	ECUV1H681KBN	50V 680P	2	
C303	ECQP2E472JZT	250V 4700P	1	
C304	RCE1AKA101BG	10V 100U	1	
C305	ECEA1HKA0R1B	50V 0.1U	1	
C306	ECQB1H393JF3	50V 0.039U	1	
C307	ECUV1H102KBN	50V 1000P	1	
C308	ECUV1H332KBN	50V 3300P	1	
C309	ECEA0JKA470B	6.3V 47UF	1	
C310,11	ECUV1E333KBN	25V 0.033U	2	
C312	ECEA1HKN2R2B	50V 2.2U	1	
C323	ECUV1H102KBN	50V 1000P	1	
C601,02	ECUV1E104ZFN	25V 0.1U	2	
$\Delta$ C603	ECA1EM222E	25V 2200U	1	
$\Delta$ C604	ECA1EM102B	25V 1000U	1	
C606	ECUV1E104ZFN	25V 0.1U	1	
C607	ECA1AM471B	10V 470UF	1	
C608	RCE1AKA101BG	10V 100U	1	
C609	ECUV1H103KBN	50V 0.01U	1	
C611	ECEA1HKA010B	50V 1U	1	
C613	RCE1AKA470BG	10V 47U	1	
C614,15	ECUV1H103KBN	50V 0.01U	2	
C616,17	ECUV1H102KBN	50V 1000P	2	
C618	RCE1CKA100BG	16V 10U	1	
C619	ECUV1H102KBN	50V 1000P	1	
C701	ECUV1E104ZFN	25V 0.1U	1	
C702	ECEA0JKA101B	6.3V 100U	1	
C705	ECUV1H103KBN	50V 0.01U	1	
C706	ECST0JY335RR	6.3V 3.3U	1	
C707,08	ECUV1H103KBN	50V 0.01U	2	
C712-15	ECUV1H101KCN	50V 100P	4	
C810	ECUV1E104ZFN	25V 0.1U	1	
C811	ECEA1EKA470B	25V 47U	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks	Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
C812	ECUV1H101KCN	50V 100P	1		Q901, 02	DTA114EUT106	TRANSISTOR	2	
C813	RCE1AKA101BG	10V 100U	1		Q903, 04	2SB709ATX	TRANSISTOR	2	
C814, 15	ECUV1H101KCN	50V 100P	2						
C816	ECUV1E104ZFN	25V 0.1U	1		R101, 02	ERJ6GEYJ682V	1/10W 6.8K	2	
C819	ECST1AX106RR	10V 10U	1		R103, 04	ERJ6GEYJ104V	1/10W 100K	2	
C901	ECUV1H101KCN	50V 100P	1		R105, 06	ERJ6GEYJ102Z	1/10W 1K	2	
C902	ECUV1E104ZFN	25V 0.1U	1		R107, 08	ERJ6GEYJ820V	1/10W 82	2	
C903	ECUV1H101KCN	50V 100P	1		R110	ERJ6GEYJ334V	1/10W 330K	1	
C912-17	ECUV1H101KCN	50V 100P	6		R111, 12	ERJ6GEYJ101Z	1/10W 100	2	
					R113, 14	ERJ6GEYJ103V	1/10W 10K	2	
CP102	RJS2A0205-2S	CONNECTOR (5P)	1		R117	ERJ6GEYJ123V	1/10W 12K	1	
CP901A	RJS1A1704	CONNECTOR (4P)	1		R118	ERJ6GEYJ102Z	1/10W 1K	1	
CP901B	RJS1A1704	CONNECTOR (4P)	1		R119, 20	ERJ6GEYJ330V	1/10W 33	2	
CP902	RJT071H11A	CONNECTOR (11P)	1		R121, 22	ERJ6GEYJ225V	1/10W 2.2M	2	
					R123-26	ERJ6GEYJ104V	1/10W 100K	4	
CS971	RJU071H11M	CONNECTOR (11P)	1		R127, 28	ERJ6GEYJ222V	1/10W 2.2K	2	
					R129	ERJ6GEYJ333V	1/10W 33K	1	
D201	MA110TX	DIODE	1		R130	ERJ6GEYJ273V	1/10W 27K	1	
D301	MA110TX	DIODE	1		R131	ERJ6GEYJ562V	1/10W 5.6K	1	
△ D603-06	RL1N4003N02	DIODE	4		R132	ERJ6GEYJ104V	1/10W 100K	1	
D609	MA723TA	DIODE	1		R133	ERJ6GEYJ103V	1/10W 10K	1	
△ D610	MTZJ10BTA	DIODE	1		R135	ERJ6GEYJ334V	1/10W 330K	1	
△ D611	MTZJ8R2CTA	DIODE	1		R137	ERJ6GEYJ334V	1/10W 330K	1	
△ D612	MTZJ5R6BTA	DIODE	1		R141, 42	ERJ6GEYJ103V	1/10W 10K	2	
D613	MA723TA	DIODE	1		R145	ERJ6GEYJ183V	1/10W 18K	1	
△ D614, 15	MA110TX	DIODE	2		R148, 49	ERJ6GEYJ562V	1/10W 5.6K	2	
D705, 06	MA110TX	DIODE	2		R153, 54	ERJ6GEYJ102Z	1/10W 1K	2	
△ D707	MTZJ5R1BTA	DIODE	1		R157, 58	ERJ6GEYJ223V	1/10W 22K	2	
D708, 09	MA110TX	DIODE	2		R159	ERJ6GEYJ104V	1/10W 100K	1	
D802	MA188TA	DIODE	1		R160	ERJ6GEYJ103V	1/10W 10K	1	
D901	SLR-305VC	L. E. D.	1		R165, 66	ERJ6GEYJ104V	1/10W 100K	2	
D904	MA110TX	DIODE	1		R167-69	ERJ6GEYJ222V	1/10W 2.2K	3	
D905	SPR-305MDTF	L. E. D.	1		R170	ERJ6GEYJ472V	1/10W 4.7K	1	
D906	MA110TX	DIODE	1		R171	ERJ6GEYJ682V	1/10W 6.8K	1	
D907	SPR-305MDTF	L. E. D.	1		R172, 73	ERJ6GEYJ122V	1/10W 1.2K	2	
D908, 09	SLR-305VC	L. E. D.	2		R174	ERJ6GEYJ103V	1/10W 10K	1	
D910, 11	MA110TX	DIODE	2		R176	ERJ6GEYJ392V	1/10W 3.9K	1	
D971	RVD1S133TA	DIODE	1		R177	ERJ6GEYJ273V	1/10W 27K	1	
					R178, 79	ERJ6GEYJ334V	1/10W 330K	2	
FW901	REZ0885	FLAT CABLE (8P)	1		R207, 08	ERJ6GEYJ104V	1/10W 100K	2	
					R209, 10	ERJ6GEYJ102Z	1/10W 1K	2	
IC101	A1898QT6BC	IC	1		R213, 14	ERJ6GEYJ392V	1/10W 3.9K	2	
IC103	BA7755AF	IC	1		R215, 16	ERJ6GEYJ153V	1/10W 15K	2	
IC201	CXA1102M-T4	IC	1		R217, 18	ERJ6GEYJ222V	1/10W 2.2K	2	
IC701	M37471M4685F	IC	1		R219	ERJ6GEYJ433V	1/10W 43K	1	
IC802	BA6265AFP-E1	IC	1		R220	ERJ6GEYJ220V	1/10W 22	1	
IC901	BU2040F-T2	IC	1		R221, 22	ERJ6GEYJ221V	1/10W 220	2	
IC971, 72	RVSGP2S24BC	IC	2		R223	ERJ6GEYJ220V	1/10W 22	1	
					R230	ERJ6GEYJ103V	1/10W 10K	1	
JK601	RJT065K15	SYSTEM CONNECTOR (15P)	1		R231	ERJ6GEYJ334V	1/10W 330K	1	
					R241, 42	ERJ6GEYJ822V	1/10W 8.2K	2	
L201, 02	SLQX303-1KT	COIL	2		R301	ERJ6GEYJ103V	1/10W 10K	1	
L301	RL08C006M-T	COIL	1		R302	ERJ6GEYJ182V	1/10W 1.8K	1	
L302	RLQZB470KT-D	COIL	1		R303	ERJ6GEYJ682V	1/10W 6.8K	1	
L701	RLQA100JT-Y	COIL	1		R304	ERJ6GEYJ223V	1/10W 22K	1	
L702	RLQZP1R0KT-Y	COIL	1		R305	ERJ6GEYJ103V	1/10W 10K	1	
L901	RLQA100JT-Y	COIL	1		R306	ERJ6GEYJ223V	1/10W 22K	1	
					△ R307	ERDS1FJ2R2	1/2W 2.2	1	
Q101-06	2SJ163PQRTX	TRANSISTOR	6		R308	ERJ6GEYJ102Z	1/10W 1K	1	
Q107	DTA114EUT106	TRANSISTOR	1		R309-11	ERJ6GEYJ472V	1/10W 4.7K	3	
Q111	2SD601ATX	TRANSISTOR	1		R313	ERJ6GEYJ1R0V	1/10W 1	1	
Q112	DTA114EUT106	TRANSISTOR	1		R601, 02	ERJ6GEYJ472V	1/10W 4.7K	2	
Q113, 14	2SD1328TX	TRANSISTOR	2		R603	ERJ6GEYJ820V	1/10W 82	1	
Q201, 02	2SJ106GBT85L	TRANSISTOR	2		△ R605	ERD2FCJ4R7	1/4W 4.7	1	
Q301	2SD601ARTX	TRANSISTOR	1		△ R607	ERD2FCG100	1/4W 10	1	
Q302	2SD1328TX	TRANSISTOR	1		R608	ERJ6GEYJ100V	1/10W 10	1	
Q303, 04	2SD874QRSTX	TRANSISTOR	2		R610	ERJ6GEYJ471V	1/10W 470	1	
Q305, 06	DTC144EUT106	TRANSISTOR	2		R612, 13	ERJ6GEYJ1R0V	1/10W 1	2	
△ Q602, 03	2SD2137PQTA	TRANSISTOR	2		R614	ERJ6GEYJ102Z	1/10W 1K	1	
△ Q605	2SD2137PQTA	TRANSISTOR	1		R615	ERJ6GEYJ332V	1/10W 3.3K	1	
Q606	2SD601ATX	TRANSISTOR	1		R616	ERJ6GEYJ103V	1/10W 10K	1	
△ Q609	2SD2137PQTA	TRANSISTOR	1		R627, 28	ERJ6GEYJ1R0V	1/10W 1	2	
Q701-03	2SD601ATX	TRANSISTOR	3		R630	ERDS2TJ1R0T	1/4W 1	1	
Q706	UN5214TX	TRANSISTOR	1		R631	ERJ6GEYJ181V	1/10W 180	1	
Q804	2SD1328TX	TRANSISTOR	1		R632, 33	ERJ6GEYJ471V	1/10W 470	2	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks	Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R634, 35	ERJ6GEYJ820V	1/10W 82	2		SA1	QZZCFM	TEST TAPE	1	
R636, 37	ERJ6GEYJ181V	1/10W 180	2		SA2	QZZCWAT	TEST TAPE	1	
R638	ERJ6GEYJ102Z	1/10W 1K	1		SA3	SZZ0L18	FLOIL AK-152	1	
R701, 02	ERJ6GEYJ103V	1/10W 10K	2		SA4	RZZ0L02	SWAFLUID #56	1	
R704	ERJ6GEYJ472V	1/10W 4.7K	1		SA5	RZZ0L05	MOLYCOAT EM-20L	1	
R705	ERJ6GEYJ473V	1/10W 47K	1						
R708	ERJ6GEYJ472V	1/10W 4.7K	1		VR102, 03	EVNDXAA00B24	V. R	2	
R709	ERJ6GEYJ101Z	1/10W 100	1		VR803	EVNDXAA00B53	V. R	1	
R710	ERJ6GEYJ102Z	1/10W 1K	1						
R711	ERJ6GEYJ104V	1/10W 100K	1		X701	EFOEC8004T4	OSCILLATOR	1	
R712	ERJ6GEYJ683V	1/10W 68K	1						
R715	ERJ6GEYJ472V	1/10W 4.7K	1		Z971	EXBF6L306SYV	COMBINATION PARTS	1	
R718	ERJ6GEYJ683V	1/10W 68K	1						
R721	ERJ6GEYJ103V	1/10W 10K	1						
R722, 23	ERJ6GEYJ102Z	1/10W 1K	2						
R727	ERJ6GEYJ472V	1/10W 4.7K	1						
R728	ERJ6GEYJ103V	1/10W 10K	1						
R729	ERJ6GEYJ472V	1/10W 4.7K	1						
R736	ERJ6GEYJ103V	1/10W 10K	1						
R738	ERJ6GEYJ102Z	1/10W 1K	1						
R739	ERJ6GEYJ272V	1/10W 2.7K	1						
R740	ERJ6GEYJ473V	1/10W 47K	1						
R741	ERJ6GEYJ223V	1/10W 22K	1						
R742	ERJ6GEYJ103V	1/10W 10K	1						
R743	ERJ6GEYJ473V	1/10W 47K	1						
R744	ERJ6GEYJ102Z	1/10W 1K	1						
R745, 46	ERJ6GEYJ103V	1/10W 10K	2						
R748	ERJ6GEYJ103V	1/10W 10K	1						
R750	ERJ6GEYJ103V	1/10W 10K	1						
R751	ERJ6GEYJ104V	1/10W 100K	1						
R806, 07	ERJ6GEYJ103V	1/10W 10K	2						
R808	ERJ6GEYJ392V	1/10W 3.9K	1						
R810	ERJ6GEYJ103V	1/10W 10K	1						
R811-13	ERJ6GEYJ272V	1/10W 2.7K	3						
R820	ERDS2FJ2R2	1/4W 2.2	1						
R900	ERJ6GEYJ821V	1/10W 820	1						
R901	ERJ6GEYJ102Z	1/10W 1K	1						
R902	ERJ6GEYJ122V	1/10W 1.2K	1						
R903	ERJ6GEYJ152V	1/10W 1.5K	1						
R904	ERJ6GEYJ182V	1/10W 1.8K	1						
R905	ERJ6GEYJ222V	1/10W 2.2K	1						
R906	ERJ6GEYJ332V	1/10W 3.3K	1						
R907	ERJ6GEYJ472V	1/10W 4.7K	1						
R908	ERJ6GEYJ682V	1/10W 6.8K	1						
R909	ERJ6GEYJ123V	1/10W 12K	1						
R910	ERJ6GEYJ223V	1/10W 22K	1						
R911	ERJ6GEYJ683V	1/10W 68K	1						
R912	ERJ6GEYJ102Z	1/10W 1K	1						
R914	ERJ6GEYJ151V	1/10W 150	1						
R915	ERJ6GEYJ121V	1/10W 120	1						
R916	ERJ6GEYJ151V	1/10W 150	1						
R917	ERJ6GEYJ121V	1/10W 120	1						

# Cabinet Parts Location



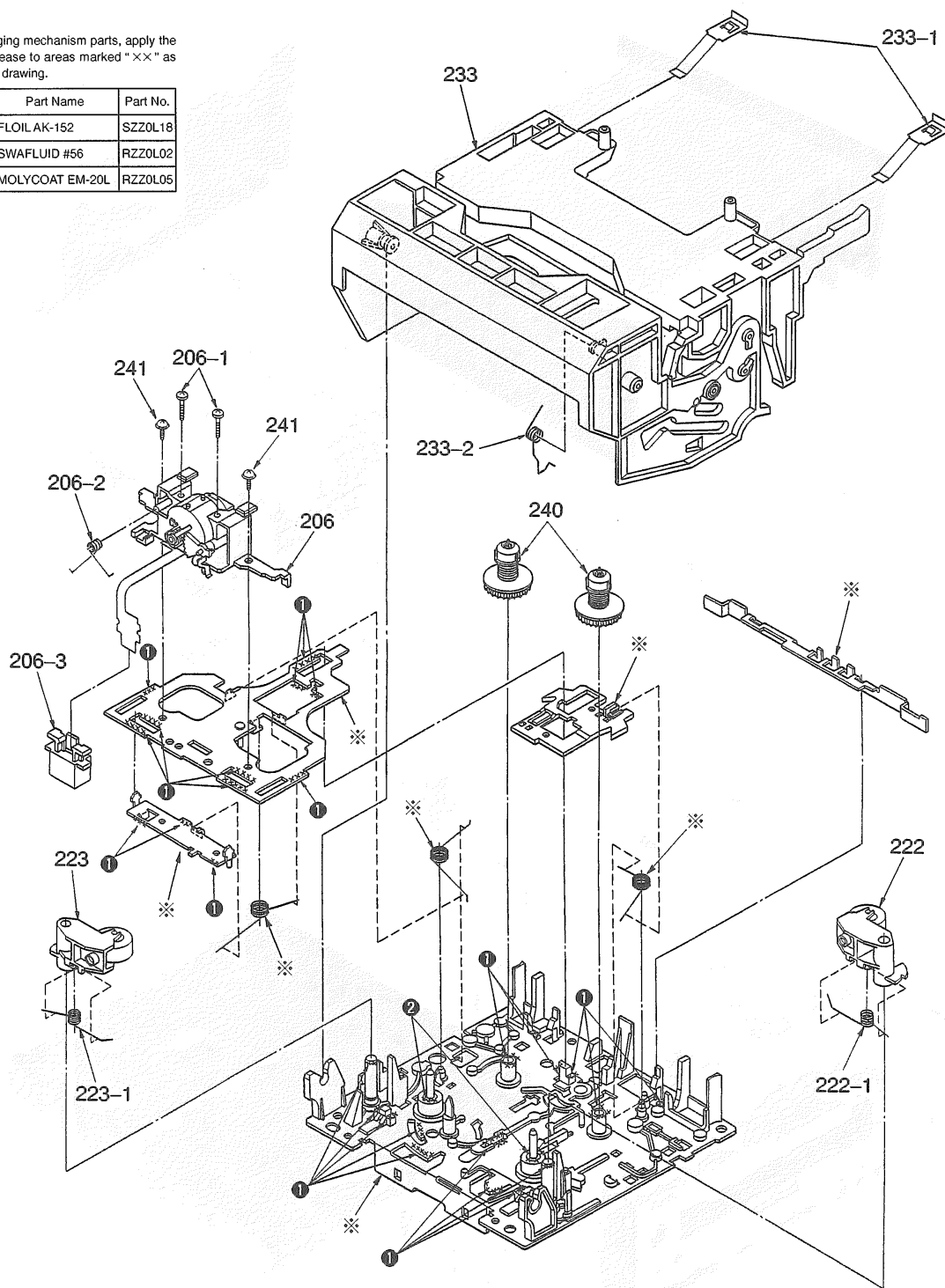
※ Not supplies.

## ■ Loading Mechanism Parts Location

### Note:

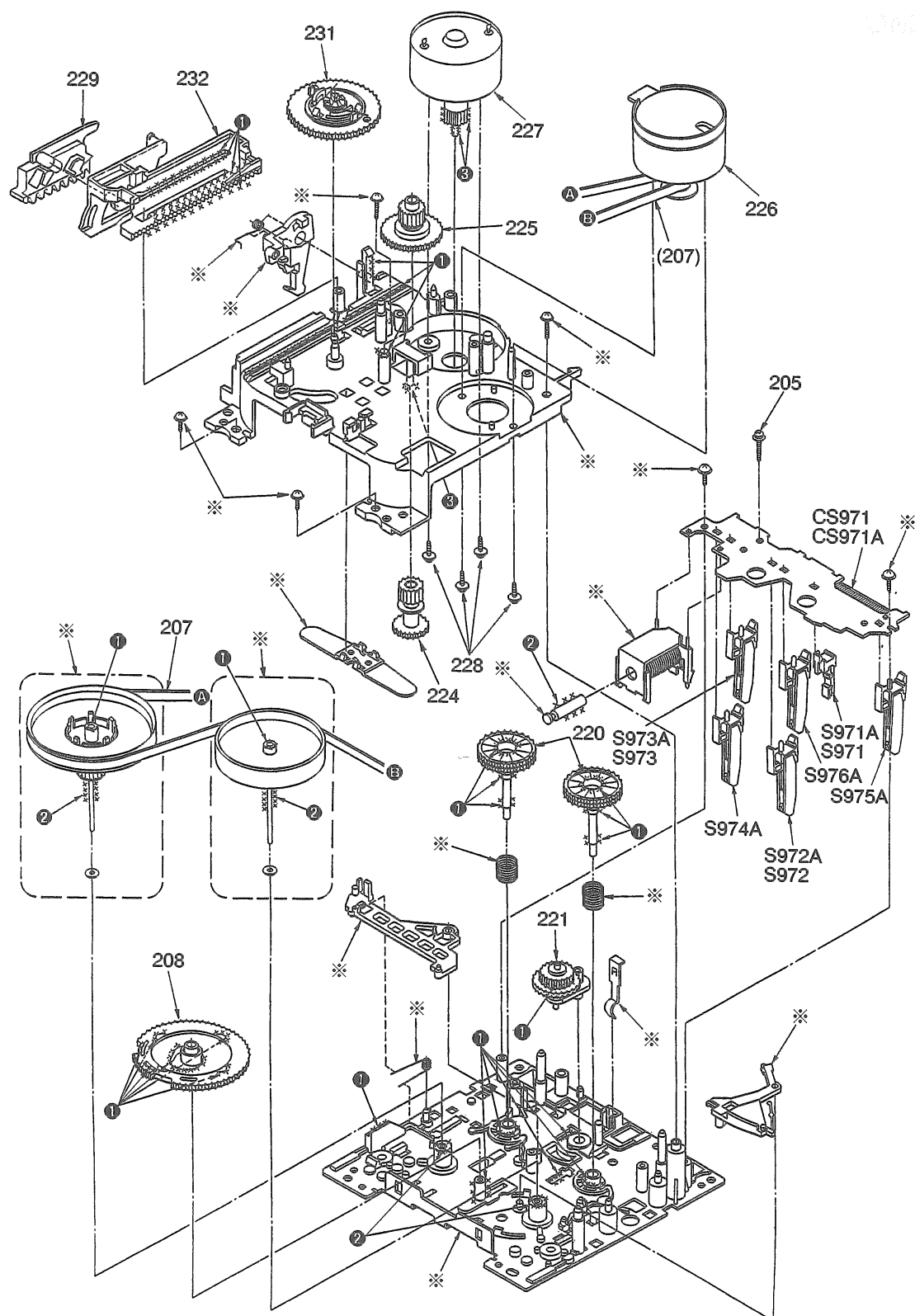
When changing mechanism parts, apply the specified grease to areas marked "××" as shown in the drawing.

Ref. No.	Part Name	Part No.
①	FLOIL AK-152	SZZ0L18
②	SWAFLUID #56	RZZ0L02
③	MOLYCOAT EM-20L	RZZ0L05



※ Not supplies.





※ Not supplies.